EXHIBIT 14

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UNITED STATES DISTRICT COURT

CENTRAL DISTRICT OF CALIFORNIA

CEIVA OPCO, LLC, a Delaware Limited Liability Company,

Plaintiff,

v.

AMAZON, INC., a Delaware Corporation,

Defendant.

Civil Action No. 2:22-cv-02709-AB-MAA

(Hon. André Birotte Jr.)

DECLARATION OF DR. WILLIAM C. EASTTOM II IN SUPPORT OF PLAINTIFF'S RESPONSE TO DEFENDANT'S SUMMARY JUDGMENT MOTION

[Filed concurrently with Opposition Brief]

DECLARATION OF DR. WILLIAM C. EASTTOM II

I, William C. Easttom II, declare and state:

1. I am over twenty-one (21) years of age.

2. I was retained in the above-captioned matter on behalf of the Plaintiff Ceiva Opco, LLC to opine, among other things, on issues related to the validity of U.S. Patent 6,442,573; U.S. Patent 9,203,930; U.S. Patent 9,654,562; and U.S. Patent 9,124,656 (collectively, the "Asserted Patents"), in the above captioned matter and to form independent expert opinions on those validity issues.

3. As part of my engagement, I issued a report on October 13, 2023 regarding the validity of the Asserted Patents, in which I opine that the Asserted Patents are valid. A true and correct copy of my Report is attached hereto to my Declaration.

4. My expert opinions, and the basis and reasons therefore, are truthfully and accurately stated in my Report. I incorporate those opinions, and the basis and reasons therefore, herein in full and as part of my testimony in this Declaration.

5. Some of my professional experience and qualifications (including my curriculum vitae) are disclosed in my Report. I incorporate that information herein in full and as part of my testimony in this Declaration.

6. The information I considered in forming my opinions are identified truthfully and accurately in my Report. I incorporate that information herein in full and as part of my testimony in this Declaration.

7. I have personal knowledge of the facts herein. If called to testify in this matter, I can, and I will, testify as stated herein.

MUNCK WILSON MANDALA
1925 Century Park East, Suite 2300
Los Angeles, California 90067

8. I declare under penalty of perjury that the foregoing is true and correct. Executed this 18th day of December, 2023, at Dallas, Texas.

DR. WILLIAM C. EASTTOM II

MUNCK WILSON MANDALA
1925 Century Park East, Suite 2300
Los Angeles, California 90067

IN THE UNITED STATES DISTRICT COURT
CENTRAL DISTRICT OF CALIFORNIA

CEIVA OPCO, LLC, A Delaware Limited Liability Company,	§	
Plaintiff,	§	
v.	§	Case No.: 2:22-CV-02709-AB (MAA)
AMAZON.COM INC., a Delaware corporation,	§	
Defendant.	§	

EXPERT REBUTTAL REPORT OF DR. WILLIAM C. EASTTOM II (CHUCK EASTTOM) Ph.D., D.Sc.

TABLE OF CONTENTS

I. INTRODUCTION

1. I have been asked to evaluate issues related to the validity of U.S. Patent 6,442,573 (hereafter referred to as the '573 Patent); U.S. Patent 9,203,930 (hereafter referred to as the '930 Patent); U.S. Patent 9,654,562 (hereafter referred to as the '562 Patent); and U.S. Patent 9,124,656 (hereafter referred to as the '656 Patent), in the above captioned matter and to form independent, expert, scientific opinions on those issues. At times, I may refer to the '573, '930, '562, and '656 Patents collectively as the "Patents-in-Suit." Throughout this report, I also address issues with the analysis performed by David B. Johnson, Ph.D. ("Dr. Johnson") as described in the Opening Expert Report of David B. Johnson, Ph.D. dated August 25, 2023 ("Johnson Opening Report").[1]

II. BACKGROUND

A. Qualifications

2. I have almost 30 years of experience in the computer science industry including extensive experience with computer security, biometrics, and mobile devices. I have authored 41 computer science books, including textbooks used at over 60 universities around the world. I also have authored over 70 research papers and am an inventor with 25 patents, including patents related to computer networking.

3. I hold a Doctor of Science (D.Sc.) degree in Cyber Security from Capitol Technology University (Dissertation Topic: "A Comparative Study of Lattice Based Algorithms for Post Quantum Computing"). I also hold a Doctor of Philosophy (Ph.D.) in Technology focused on nanotechnology from Capitol Technology University (Dissertation Topic: "The Effects of Complexity on Carbon Nanotube Failures"). I also have a Doctor of Philosophy (Ph.D.) in

[1] Citations to the Johnson Opening Report are in the form: Johnson ¶__.

Computer Science from the University of Portsmouth (Dissertation Topic: "A Systematic Framework for Network Forensics Using Graph Theory"). I also hold three master's degrees, one in Applied Computer Science, one in Education, and one in Systems Engineering.

4. I am currently an Adjunct Lecturer for Georgetown University teaching graduate courses in requirements engineering and cryptography. I am also an Adjunct Professor of Computer Science for Vanderbilt University teaching graduate computer science courses, specifically quantum computing and digital forensics.

5. I am a Senior Member and Distinguished Speaker for the Association of Computing Machinery ("ACM") and a Senior Member and Distinguished Visitor of the Institute for Electrical and Electronics Engineering ("IEEE"). The IEEE is the world's largest and most preeminent engineering organization. Among other activities, the IEEE creates industry standards for a wide range of engineering disciplines, including software development standards. I am also a Distinguished Visitor of the IEEE. I have further been involved in IEEE standards creation for several years:

6. I worked on the DevOps 2675 Standards Group to Build Reliable and Secure Systems from 2017 to 2019.

7. I am currently the Vice Chair of the IEEE P23026 Standards Group "Systems and Software Engineering - Engineering and Management of Websites for Systems, Software, and Services Information."

8. I am the Chair of the IEEE P3123 Standards Group "Artificial Intelligence and Machine Learning (AI/ML) Terminology and Data Formats."

9. I am also a member of the IEEE Engineering in Medicine and Biology Standards Committee. I have worked on the Standard for a Unified Terminology for Brain-Computer Interfaces P2731 from 2020 to present.

10. In addition to the summary I have provided here, I describe my qualifications, issued patents, publications, and experience as an expert witness in greater detail in my curriculum vitae ("CV") attached as Exhibit A.

B. Prior Testimony

11. In the past 5 years I have testified on 46 occasions in hearings, trials and depositions. My entire record of testifying is in my curriculum vitae. Exhibit A.

C. Compensation

12. I am being compensated at my usual rate of $500/hour. No part of my compensation is contingent upon the outcome of this case nor upon my opinions.

D. Scope of work

13. I have been asked to opine on issues related to validity of asserted claims 2, 6, and 19 of the '573 Patent; asserted claims 1-8 and 15 of the '930 Patent; asserted claims 1, 4, 11, 16, 17, and 20 of the '562 Patent; and asserted claims 1, 2 and 5-8 of the '656 Patent (collectively these are referred to as the "Asserted Claims").

III. LEGAL PRINCIPLES

14. I am not an attorney and do not offer legal opinions. The following subsections simply describe my understanding of relevant legal principles.

A. Presumption of Validity

15. I understand that an issued patent is presumed to be valid and that each claim of a patent shall be presumed valid independently of the validity of other claims. Dependent claims shall be presumed valid even if dependent upon an invalid claim. I understand that the presumption

of validity requires Amazon to prove invalidity based on clear and convincing evidence, which is a higher standard than that which is applied to prove infringement.

16. 35 U.S. Code § 282 states, "[a] patent shall be presumed valid. Each claim of a patent (whether in independent, dependent, or multiple dependent form) shall be presumed valid independently of the validity of other claims; dependent or multiple dependent claims shall be presumed valid even though dependent upon an invalid claim. The burden of establishing invalidity of a patent or any claim thereof shall rest on the party asserting such invalidity."

B. Eligibility

17. I understand that issued patents are presumed valid, including as to patent eligibility, and that a patent challenger has the burden to overcome this presumption by clear and convincing evidence. I understand that 35 U.S.C. § 101 states that "[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title." I further understand that this provision is limited by the long-recognized exception that laws of nature, natural phenomena, and abstract ideas are not patentable.

18. I understand that the U.S. Supreme Court outlined a two-step analysis to determine whether a claim is patent eligible in the case of *Alice Corporation v. CLS Bank International*, decided on June 19, 2014 ("*Alice*"). In the first step, a court determines whether the claims at issue are directed to one of those above listed patent-ineligible concepts. If the answer to this first question is negative, then the claims are patent eligible. If the answer is yes, then a second step asks if there is an inventive concept sufficient to ensure that the patent in practice amounts to significantly more than a patent on the ineligible concept itself. I understand that the second step considers the elements of each claim both individually and as an ordered combination to determine whether the additional elements transform the nature of the claim into a patent-eligible application.

I also understand that if an inventive concept is significantly more than the abstract idea itself and not simply an instruction to implement or apply the abstract idea on a computer, then it has transformed the abstract idea into a patent-eligible invention. I further understand that the second step is satisfied when the claim limitations involve more than performance of well-understood, routine, and conventional activities previously known to the industry. I understand that an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces.

19. I further understand that courts regularly look to the patent specification for guidance in determining patent eligibility, finding that recited benefits of claimed inventions and recognition of shortcomings in the prior art can emphasize that a claim is directed to an improvement of an existing technology or otherwise embodies patent-eligible concepts. I understand this can be done by identifying a specific asserted improvement and the advantages offered by that technological improvement. I also understand that the claims themselves do not need to articulate the advantages of the claimed invention to be patent-eligible, and that a claimed improvement is patent eligible if the combination of claim elements enable the product or system to do things it could not do before. I understand that it is not enough to identify a patent-ineligible concept within the claim, but instead a party attempting to prove invalidity must show that the patent-ineligible concept is what the claim is truly directed to or focused on. I understand that this analysis of what a claim is directed to or focused on requires looking to the specification to understand the problem facing the inventor and, ultimately, what the patent describes as the invention. Even at step 1, I understand that a court must look to the claims as an ordered combination, without ignoring the requirement of the individual steps. I understand that during the

step 1 analysis, a finder of fact should be careful to avoid oversimplifying or describing the claims at a high level of abstraction and untethered from the claim language.

20. I understand that mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention, and that if a patent's recitation of a computer amounts to a mere instruction to implement an abstract idea on a computer, that addition cannot impart patent eligibility. However, I also understand that improvements in computer technology are not all inherently abstract. In dealing with claims involving software, I understand that one relevant question is whether the focus of the claims is on specific asserted improvement in computer capabilities, rather than on a process that qualifies as an abstract idea for which computers are merely used as a tool.

C. Written Description

21. I understand that 35 U.S.C. § 112 requires that the specification of a patent contain a written description of the invention, and the manner and process of making and using the invention, in full, clear, concise, and exact terms as to enable any person skilled in the art to make and use the invention. I understand that the written description requirement is separate and distinct from the enablement requirement.

22. I am further informed that the written description of the invention must clearly allow persons of ordinary skill in the art to recognize that the inventor invented what is claimed. In other words, the test for sufficiency is whether the disclosure in the application reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date.

23. I understand that the term "possession" can be understood as "possession as shown in the disclosure" and that the test requires an objective inquiry into the four corners of the specification from the perspective of a Person of Ordinary Skill in the Art ("POSITA"). I

understand that, based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed. I also understand that support for the claimed invention does not require use of the exact terms appearing in the claim verbatim to provide sufficient enabling or written description support.

24. I further understand that the written description requirement does not demand either examples or an actual reduction to practice and that a constructive reduction to practice that in a definite way identifies the claimed invention can satisfy the written description requirement. I also understand that actual "possession" or reduction to practice outside of the specification is not enough. Rather, I understand that the specification itself must demonstrate possession. I further understand that a description that merely renders the invention obvious does not satisfy the requirement.

D. Enablement

25. As indicated above, 35 U.S.C. § 112 requires that the written description contains the manner and process of making and using the invention, in full, clear, concise, and exact terms as to enable any person skilled in the art to make and use the invention. I understand that the enablement requirement is separate and distinct from the written description requirement.

26. I understand that in order to show that a claim is not enabled, it is Amazon's burden to establish that a POSITA would not be able to practice the claimed invention without undue experimentation. I am informed that the fact that some experimentation may be required does not mean a claim is not enabled, instead the amount of experimentation must be "undue." I also understand that the determination of whether the amount of experimentation required is "undue" is a factually specific inquiry and that a POSITA should weigh the *Wands* factors in making this determination. The *Wands* factors are:

(1) the quantity of experimentation necessary,

(2) the amount of direction or guidance presented,

(3) the presence or absence of working examples,

(4) the nature of the invention,

(5) the state of the prior art,

(6) the relative skill of those in the art,

(7) the predictability or unpredictability of the art, and

(8) the breadth of the claims.

27. Further, I have been informed that to prove lack of enablement, it is Amazon's burden to identify specific embodiments which it asserts are within the scope of the claims but are not enabled. Accordingly, I understand that stating a conclusion that the claims are too broad, and the specification's discussion is too narrow, is insufficient to meet Amazon's burden.

E. Definiteness

28. I understand that 35 U.S.C. § 112 requires that a patent specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. I understand that a claim is invalid as indefinite if a person of ordinary skill in the art at the time of the invention would not understand what is claimed when the claim is read in light of the specification. I further understand that the standard for definiteness is described as "reasonable certainty." In a definiteness analysis, I understand that claim terms are typically given their ordinary and customary meaning as understood by one of ordinary skill in the pertinent art, and the generally understood meaning of particular terms may vary from art to art. Therefore, claim terms should be analyzed in view of the application's specification and prosecution history from the perspective of those skilled in the relevant art at the time the patent was filed since a particular term used in one patent or application may not have the same meaning

when used in a different application. I further understand that terms with subjective language may still meet the definiteness requirement if, when viewed in light of the specification and prosecution history, they inform those skilled in the art about the scope of the invention with reasonable certainty. For example, intrinsic evidence such as exemplary designs, specific examples, exclusions, or requirements for otherwise potentially subjective language can support definiteness for potentially subjective terms.

F. Priority Dates, Conception, and Reduction to Practice

29. I understand that in situations involving pre-AIA patent applications a purported prior art reference may be antedated and thus eliminated as "prior" art by showing earlier conception and reduction to practice of the claimed invention by the inventors.

30. I understand that a patent owner can demonstrate prior invention in two ways: (i) by showing an earlier reduction to practice of the claimed invention before the critical date of the reference; or (ii) by showing conception of the invention prior to the critical date, plus reasonably continuous diligence to reduce the invention to practice after the critical date.

31. Conception is the formation, in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice.

32. A reduction to practice can be either a constructive reduction to practice, which occurs when a patent application is filed, or an actual reduction to practice.[2]

[2] For actual reduction to practice, the inventor must have (i) constructed an embodiment or performed a process that met all the limitations of the claim at issue; and (ii) determined that the invention would work for its intended purpose. Depending on the character of the invention and the problem it solves, determining that the invention will work for its intended purpose may require testing. When testing is necessary, the embodiment relied upon as evidence of priority must work for its intended purpose.

33. Reasonably continuous diligence does not have to be every day during the critical period and may include periods of inactivity. It is not required that the inventor or his patent attorney drop all other work and concentrate only on the particular invention involved.

34. An inventor's priority claim must be corroborated, typically with dated documents, such as drawings or records. However, there is no particular formula that an inventor must follow in providing corroboration. Instead, corroboration is determined by a "rule of reason" approach in which all pertinent evidence is evaluated—as a whole, not individually—to determine if the inventor's story is credible.

35. For example, an inventor's conception can be corroborated through circumstantial evidence even though no one piece of evidence in and of itself establishes that fact.

36. Likewise, for reduction to practice, it is not necessary to produce an actual over-the-shoulder observer. Rather, sufficient circumstantial evidence of an independent nature can satisfy the corroboration requirement.

37. Similarly, the point of the diligence analysis is not to scour the patent owner's corroborating evidence in search of intervals of time where the patent owner has failed to substantiate some sort of activity. It is to assure that, in light of the evidence as a whole, the invention was not abandoned or unreasonably delayed.

38. The rule of reason does not require corroboration for every factual issue contested by the parties. Nor does the law impose an impossible standard of "independence" on corroborative evidence by requiring that every point be corroborated by evidence having a source totally independent of the inventor; indeed, such a standard is the antithesis of the rule of reason.

39. In the final analysis, each corroboration case must be decided on its own facts with a view to deciding whether the evidence as a whole is persuasive.

G. Anticipation

40. I understand that a claim is invalid as "anticipated" if each and every element of the claim as construed by the Court is found, either expressly or inherently, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the claim. The elements must be arranged as required by the claim, but identical terminology is not required. The anticipation analysis asks solely whether the prior art reference discloses and enables the claimed invention, and not how the prior art characterizes that disclosure or whether alternatives are also disclosed.

41. I also understand that if any claim element is not found expressly or inherently in a reference, that reference does not anticipate that claim.

42. I understand that in order to establish that an element of a claim is "inherent" in the disclosure of a prior art reference, it must be clear to one skilled in the art that the missing element is the inevitable outcome of the process and/or thing that is explicitly described in the prior art, and that it would be recognized as necessarily present by a person of ordinary skill in the art. I understand that to establish inherency, it is not enough that a certain result or characteristic may occur or be present in the prior art, nor may inherency be established by probabilities, possibilities, speculation, or guesswork.

43. I understand that if an independent claim is not anticipated by a single prior art reference, then a claim dependent on that independent claim also is not anticipated.

H. Obviousness

44. I understand that a patent claim is invalid if the differences between the subject matter and the prior art are such that the subject matter as a whole would have been obvious to a POSITA at the time of the alleged invention. I further understand that an obviousness analysis involves a review of the scope and content of the asserted prior art; the differences between the

prior art and the claims at issue; the level of ordinary skill in the pertinent art; and objective indicia of non-obviousness (i.e., secondary considerations), such as long-felt but unsolved needs, failure of others, industry praise, commercial success, and skepticism of others in the field.

45. In determining obviousness based on a combination of prior art references, I also understand that evidence of a reason to combine the teachings is required to make the combination. Any evidence that one or more of the references would have taught away from the claimed invention at the time of the invention must also be considered.

46. I have been informed that the following rationales, among others, may support a conclusion of obviousness:

a. the combination of familiar elements according to known methods to yield predictable results;

b. the simple substitution of one known element for another to obtain predictable results;

c. the use of known techniques to improve similar methods or apparatuses in the same way;

d. the application of a known technique to a known method or apparatus ready for improvement to yield predictable results;

e. the choice of a particular solution from a finite number of identified, predictable solutions with a reasonable expectation of success;

f. the use of known work in one field of endeavor in either the same field or a different one based on design incentives or other market forces, if the variations are predictable to one of ordinary skill in the art; and

g. the following of some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

47. I also understand that secondary considerations such as long-felt but unsolved needs, failure of others, praise, skepticism, and commercial success are relevant to determining obviousness.

48. I understand that there must be evidence showing an articulated reasoning with rational underpinnings to support a motivation to combine teachings and to support the legal conclusion of obviousness. However, I understand that proposed modifications which would render the prior art unsatisfactory for its intended purposes or change the principal operation of the reference do not render a claim obvious.

49. Moreover, if prior art indicates that the invention would not have worked for its intended purpose, or otherwise teaches away from the invention, then a claim would not be obvious. A reference teaches away when a POSITA, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken in the claim.

50. A reference that merely expresses a general preference for an alternative invention but does not criticize, discredit, or otherwise discourage investigation into the claimed invention does not teach away.

51. I understand that if an independent claim is not obvious over a prior art reference, then a claim dependent on that independent claim also is not obvious over the same prior art reference.

I. Motivation to Combine

52. It is my understanding that a motivation to combine must meet certain requirements. It is not sufficient for an expert to simply state there is a motivation to combine. Instead, there must be a clearly articulated reason to combine. In order to satisfy these requirements, the articulated motivation to combine should include the following:

a. the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;

b. one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately; and

c. one of ordinary skill in the art would have recognized that the results of the combination were predictable.

J. Obviousness-Type Double Patenting

53. I understand that the doctrine of obviousness-type double patenting prohibits an inventor from obtaining a second later-expiring patent for claims that are not patentably distinct from the claims of a first earlier-expiring patent.

54. The obviousness-type double patenting analysis involves two steps. First, the court construes the claims in the earlier patent and the claims in the later patent and determines the differences. Second, the court determines whether those differences render the claims patentably distinct.

55. If the later expiring patent claim is anticipated by or merely an obvious variation of an invention disclosed and claimed in the reference patent, then the later expiring patent claim is

invalid for obviousness-type double patenting. However, obviousness is not demonstrated merely by showing that an earlier expiring patent dominates a later expiring patent.

56. As a general rule, obviousness-type double patenting determinations turn on a comparison between an inventor's earlier and later claims, with the earlier patent's written description considered only to the extent necessary to construe its claims. This is so because the nonclaim portion of the earlier patent ordinarily does not qualify as prior art against the inventor and because obviousness-type double patenting is concerned with the improper extension of exclusive rights—rights conferred and defined by the claims. The focus of the obviousness-type double patenting doctrine thus rests on preventing an inventor from claiming an obvious variant of what it has previously *claimed*, not what it has previously *disclosed*. Thus, the reference patent specification may be used to determine whether a claim merely defines an obvious variation of what is earlier disclosed and claimed, to learn the meaning of claim terms, and to interpret the coverage of a claim. But it cannot be used as prior art.

K. Claim Construction

57. I understand that the words of a claim are generally given their ordinary and customary meaning to a POSITA as of the effective filing date of the application for the patent at issue. I understand that claim construction is a task for the Court to undertake and, as such, I offer no constructions of any claim terms.

58. For construed terms, I considered the Court's claim construction orders in *Ceiva Logic, Inc. v. Amazon.com*, Case No. 2:19-cv-09129-AB-MAA (C.D. Cal.)[3] ("*Ceiva I*"),[4] and

[3] Dkt. 97 in *Ceiva I*, December 17, 2020, Claim Construction Order.

[4] I understand that the Court ordered the dismissal without prejudice of the predecessor *Ceiva I* Action on March 16, 2022, finding that Ceiva Logic, Inc. "lack[ed] constitutional standing to assert the Patents-in-Suit" because it "assigned all of its rights in the Patents-in-Suit" to its subsidiary, Ceiva Opco, LLC ("Ceiva Opco" or "Ceiva"), as part of a corporate reorganization.

Ceiva Opco, LLC v. Amazon.com, Case No. 2:22-cv-02709-AB-MAA (C.D. Cal.)[5] ("*Ceiva II*").

The parties agreed on the following constructions:

59. The parties agreed on the following constructions in *Ceiva I* and *Ceiva II*, which the Court adopted:

Term	Agreed Construction
"An apparatus for displaying content comprising image data received from a server system via a communications network on a display screen comprising" ('562 Patent, Claim 1)	Plain and ordinary meaning. Preamble is limiting.
"A digital display apparatus having an integrated housing, said integrated housing comprising" ('930 Patent, Claims 1 and 11)	Plain and ordinary meaning. Preamble is limiting.
"package" ('573 Patent, Claims 2 and 18)	"compilation of data that provides the recipient and the transmitting device with information needed to complete a transaction"
"said remote authentication function" ('930 Patent, Claims 2,[6] 12, 13)	"said authentication function"
"said image display parameter" ('930 Patent, Claim 11)	"an image display parameter"
"A display device for displaying image date received from a server system comprising" ('656 Patent, Claim 1)	Plain and Ordinary Meaning. Preamble is limiting

60. The Court construed the disputed claims in *Ceiva I* as follows:

[5] Dkt. 47 in *Ceiva II*, March 16, 2023, Claim Construction Order.

[6] While the Court's Claim Construction Order references Claim 2, this particular claim language does not appear in Claim 2 of the '930 Patent.

Term	Court's Construction
"wherein said onboard software comprises … an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region" ('930 Patent, Claims 1 and 11)	Plain meaning, not subject to 35 U.S.C. § 112, ¶ 6
"[wherein said onboard software comprises …] an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system" ('930 Patent, Claims 1 and 11)	Plain meaning, not subject to 35 U.S.C. § 112, ¶ 6
"[wherein said onboard software comprises …] a software update function configured to obtain an updated version of said onboard software from said server and to replace said current version of said onboard software in said memory with said updated version" ('930 Patent, Claims 1 and 11)	Plain meaning, not subject to 35 U.S.C. § 112, ¶ 6
"[wherein said onboard software further comprises …] an initialization function configured to prompt said first remote server system to associate a record with said digital display apparatus" ('930 Patent, Claims 4 and 14)	Plain meaning, not subject to 35 U.S.C. § 112, ¶ 6

L. Person of Ordinary Skill in the Art

61. I understand that certain issues in patent law must be addressed from the perspective of a "person having ordinary skill in the art," a "POSITA." I have been informed that this hypothetical person having ordinary skill in the art is one who thinks along the lines of conventional wisdom in the art rather than one who undertakes to innovate. I have further been informed that certain factors may be considered in deciding the level of skill in the art, including:

the type of problems encountered in the art, the sophistication of the technology, and the education level of active workers in the field.

62. For purposes of the Patents-in-Suit, a POSITA would be one with a bachelor's degree in electrical engineering or related field (computer science, systems engineering, etc.) with at least three years of experience including experience with digital imaging. More education could substitute for experience, and vice versa. For example, someone without an engineering degree, but 5 years of experience could qualify as a POSITA. Similarly, someone with less than 1 year of experience but a master's degree could also qualify as a POSITA.

63. I understand that Dr. Johnson has a slightly different view of a POSITA stating that a POSITA would have a "bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: that "[t]he technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. However, even if one were to adopt Dr. Johnson's opinion of a POSITA, my opinions in this matter would not change.

IV. MATERIALS REVIEWED

64. In addition to the items specifically discussed in this Report, I have reviewed the following materials in reaching the conclusions in this report:[7]

- The Patents-in-Suit and file histories;
- Amazon's Eighth Supplemental Responses and Objections to Interrogatories Nos. 1-25, July 28, 2023;
- Documents related to industry praise produced in this case;

[7] A full listing of materials I have considered in preparing this report is attached as Exhibit B.

- U.S. Patent No. 6,670,934 (Muoio);
- U.S. Patent No. 7,155,679 (Bandaru);
- Prosecution History of Original Bandaru Parent Application (U.S. Patent Application No. 09/195,355);
- U.S. Patent No. 6,396,472 (Jacklin);
- U.S. Patent No. 6,725,460 (Nishiyama);
- U.S. Patent No. 6,771,290 (Hoyle);
- U.S. Patent No. 6,308,061 (Criss);
- U.S. Patent No. 5,657,390 (Elgamal);
- U.S. Patent No. 6,161,133 (Kikinis);
- U.S. Patent No. 7,072,932 (Stahl);
- U.S. Patent No. 6,553,490 (Kottapurath);
- The Transport Layer Security Protocol Version 1.0 (“RFC 2246”);
- Fujitsu Stylistic 1000 Tablet Computer (“Stylistic Tablet”);[8]
- Microsoft Windows 98 (“Win98”);[9]
- Amazon’s June 16, 2023, Final Invalidity Contentions;
- Opening Expert Report of David B. Johnson, Ph.D.;
- AMZ_CEIVA-PA00012229;
- AMZ_CEIVA-PA00012113;

[8] I personally tested a Fujitsu Stylistic 1000 Tablet Computer and reviewed the documents produced by Amazon with respect to the Fujitsu Stylistic 1000 Tablet Computer, as noted throughout this report.

[9] At least with respect to my use of Windows 98, First Edition, during preparation of this report and the Windows 98 related materials cited in Dr. Johnson’s report (Microsoft Windows 98 Resource Kit, Microsoft Professional Editions (“Windows 98 Resource Kit”) published by Microsoft Press in 1998, and Platinum Edition *Using Windows 98* (“*Using Windows 98*”) published by Que Publication in June 1998.

- AMZ_CEIVA-PA00012218;
- AMZ_CEIVA-PA00012134;
- Ceiva-A 00008144;
- Ceiva-A 00004556;
- Ceiva-A 00004342;
- Ceiva-A 00000934;
- Ceiva-A 00000001;
- Ceiva Opco 000032;
- CEIVA_3P_000001 to CEIVA_3P_000086;
- Ceiva-A 00008440 to Ceiva-A 00008613;
- DJ00000001 to DJ00008997; and
- All references cited in this Report.

V. STATE OF THE ART AT THE TIME OF THE PATENTS

65. I first note that Dr. Johnson's opinions in this area are quite unorthodox. He begins by citing the science fiction novel and film *2001: A Space Odyssey*. Johnson ¶¶311-14. Science fiction is, by definition, fictional. Dr. Johnson makes no attempt to explain what vague references to technology that is at most superficially similar to the Patents-in-Suit has any bearing on the validity of the Patents-in-Suit. I further note that the reference to science fiction is not merely an ancillary issue in Dr. Johnson's report, but is actually the very first item he addresses in his section titled *GENERAL STATE OF THE PRIOR ART BEFORE THE ASSERTED PATENTS*. Dr. Johnson spends paragraphs 311 to 314, spanning two pages of his report, on this fictional device.

66. Even if one sets aside the fact that Dr. Johnson is comparing a fictional device that did not actually exist with the Patents-in-Suit, Dr. Johnson's report still has misleading statements. Dr. Johnson then compares a photo of an iPad with the fictional Newspad device and follows it by

stating "Beyond the parallels between the claimed frame device and the Newspad device in 1968 in the novel and film 2001: A Space Odyssey, I discuss in the sections below, by way of example, the five main concepts described by the asserted patents, to which I understand Ceiva contends the patents are directed." Johnson ¶¶313-14. It is unclear why Dr. Johnson would show a comparison of an iPad with the fictional Newspad, but then state there are parallels between the claimed frame device and the fictional Newspad. I also note that the iPad was first released in 2011.[10]

67. Returning to the fact that the Newspad was fictional, and no such device actually existed, the movie *2001 A Space Odyssey* was released in 1968.[11] I first note that the plot of that movie also included interplanetary travel to Jupiter and a super intelligent alien race that seeded life and intelligence around the universe. It is unclear if Dr. Johnson views these items as also factual, as he apparently views the Newspad device.

68. Since Dr. Johnson is citing a non-existent device from a 1968 fictional movie, it is worthwhile to consider what else was featured in science fiction in 1968. 1968 was the year the movie *Planet of the Apes* was released,[12] featuring a future where intelligent apes rule the earth. From 1966 to 1969 the television series *Star Trek*[13] aired which featured faster than light travel, teleportation beams, and human alien hybrids. 1968 was also the year that the movie *The Fantastic Voyage* was released. In that movie, a vehicle with humans is miniaturized and inserted into another human's body. It is unclear if Dr. Johnson views these technologies (faster than light

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[10] https://appleinsider.com/articles/18/04/03/a-brief-history-of-the-ipad-apples-once-and-future-tablet

[11] https://www.imdb.com/title/tt0062622/

[12] https://www.imdb.com/title/tt0063442/

[13] https://www.imdb.com/title/tt0060028/

travel, teleportation beams, intelligent apes, miniature submarines injected into humans, etc.) as being real, as he appears to view the fictional Newspad device.

69. Citing fiction has no place in forming scientific opinions.

70. Dr. Johnson also makes a rather baffling statement that "Traditional picture frames, such as those described in the shared specification of the asserted patents as being a part of the digital display device, have been in use for centuries to display many forms of artwork, including paintings, photographs, and other types of media, and have been made and used in a wide variety of shapes, sizes, and materials." Johnson ¶318. I assume Dr. Johnson intends to say that picture frames have been around for centuries, not that digital display devices have been around for centuries. The claims in question are not related to traditional picture frames but rather to display devices.

71. Dr. Johnson then goes on to discuss cave paintings (Johnson, 319). At no point does Dr. Johnson state what relationship he believes there is between cave paintings, or Renaissance oil paintings, and the Patents-in-Suit.

72. In paragraph 320, Dr. Johnson then discusses television and claims it is network connected. Dr. Johnson then asserts "Televisions receive picture information to display, over the broadcast television network, whether by terrestrial wireless transmissions, satellite wireless transmissions, or wired cable transmissions."

73. I first note that the only photos of televisions that Dr. Johnson provides are 1960's console televisions. Dr. Johnson then states: "In the late 1970's a television was also used as perhaps the first frame device for displaying digital photographic images." Johnson ¶322. However, Dr. Johnson does not compare any television set to any of the claims of the Patents-in-Suit. In fact, later in his report, Dr. Johnson actually describes computer networks: "The Internet

and other computer networks communicate by packet switching, in which communication between two computers (or other devices) is divided into a sequence of 'packets.' Each packet generally has a maximum size of, for example, 1500 bytes. Larger amounts of information being sent must be divided into multiple packets." Johnson ¶245.

74. Dr. Johnson's description of a computer network contradicts his characterization of television broadcast as a network, since television broadcasts do not function in the way Dr. Johnson described a network functioning.

75. Additionally, Dr. Johnson's characterization of a television set from the 1960s and 1970s to a network connected display device is flawed. Television networks of the time had one way broadcast and television sets were receive-only devices that received broadcast signals from the TV networks but were not capable of sending any signals back to the TV stations. The networks described in the Patents-in-Suit are computer networks, *e.g.*, '930 Patent, 2:48-63, with two-way packetized communications.

76. Furthermore, a television from that time period was vastly different than the Patents-in-Suit. Among the numerous differences which would be clear to a POSITA is the fact that a television from the time period identified by Dr. Johnson displayed programming content sent out generally to all television sets within a broadcast area, not individual content addressed to a particular device. And the user of the television had no control over what was broadcast at a particular time.

77. Televisions of the time period identified by Dr. Johnson had no storage, no CPU, no software, and certainly no ability to automatically update the software. I also note that Dr. Johnson does not assert televisions or any specific television as prior art invalidating any claim of the Patents-in-Suit. Therefore, Dr. Johnson's entire discourse on televisions is irrelevant.

A. The state of computer technology at the time of the Patents-in-Suit

78. As discussed in Section IX below, I understand that the priority dates for the Patents-in-Suit are at least as early as September 16, 1999. For context, at least the following historical events occurred in 1999: (a) on January 1, 1999, the Euro currency was first introduced; (b) on February 12, 1999, U.S. President Bill Clinton was acquitted in impeachment proceedings in the United States Senate;[14] (c) on March 29, 1999, the Dow Jones Industrial Average closed above 10,000 for the first time;[15] and (d) on June 1, 1999, file sharing site Napster was launched.[16]

79. In sports and pop culture, 1999 saw the debut of HBO's drama "The Sopranos," NBC's "The West Wing," and Fox TV's "Family Guy;" Jon Stewart succeeded Carig Kilborn as host of "The Daily Show" on Comedy Central; Quarterback John Elway and the Denver Broncos beat the Atlanta Falcons in Super Bowl XXXIII; Hip Hop artist Eminem released his first major record album "The Slim Shady LP;" movies "The Matrix," "The Mummy," "American Beauty," "Fight Club," "The Sixth Sense," and "Star Wars: Episode I - The Phantom Menace" were each released in theaters; the third "Harry Potter" book, "Harry Potter and the Prisoner of Azkaban," was released in print; and Lance Armstrong won his first of seven consecutive Tour de France titles.[17]

80. In computing, PC users had just been introduced to Windows 98 starting in June 1998, which first added support for DVD players, USB peripherals, and multiple monitors.[18]

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[14] https://www.history.com/this-day-in-history/president-clinton-acquitted

[15] https://money.cnn.com/1999/03/29/markets/marketwrap/

[16] https://www.bbc.com/culture/article/20190531-napster-turns-20-how-it-changed-the-music-industry

[17] https://www.onthisday.com/events/date/1999;
https://www.onthisday.com/events/date/1999?p=2

[18] https://archive.org/details/PC_Computing_1998_07/page/n83/mode/2up

At Apple, Steve Jobs had returned as an interim CEO in September 1997, and in August 1998 the colorful iMac G3 computer was released to the public running Mac OS 8.1, which was the first Apple computer with a CD drive and a USB drive.[19] The iMac G3 came with a 10/100 BASE-T Ethernet port and a 56 kbps dial-up modem (although it was originally announced with a 33.6 kbps modem),[20] using a standard that had been released in 1998.[21] The first iPod, with its monochrome screen and mechanical scroll wheel, would not be released until October 2001.

81. Web browsing was also still relatively new in 1999. Mosaic released its Netscape 0.9 web browser in October 1994 (later named Netscape Navigator), with Version 1.0 released in December of the same year.[22] Microsoft's Internet Explorer 1.0 was originally released in August 1995.[23] Also in 1995, the Internet Engineering Task Force (IETF) released the standard for HyperText Markup Language (HTML) 2.0, which allowed inline images in HTML web pages via the "<img>" element.[24] Web portals Yahoo, Excite and Lycos were popular for web searches in 1999, and Google was just starting to be discovered as an alternative.[25] Examples of popular web pages from 1999 show a higher text to image ratio and lower quality images than are used in similar websites today.[26]

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[19] https://www.macworld.com/article/191974/imacanniversary.html

[20] http://apple-history.com/imac, https://www.macrumors.com/2022/08/15/24-years-ago-the-first-imac-went-for-sale/

[21] https://www.itu.int/itu-t/recommendations/rec.aspx?rec=4493

[22] https://web.archive.org/web/20060427112146/http://money.cnn.com/magazines/fortune/fortune_archive/2005/07/25/8266639/index.htm

[23] https://www.britannica.com/technology/Internet-Explorer

[24] https://datatracker.ietf.org/doc/html/rfc1866

[25] https://www.salon.com/1998/12/21/straight_44/

[26] https://www.hellaproperty.com/blog/technology/amazon-apple-yahoo-original-websites/

82. Digital cameras were starting to reach mainstream in 1999 but were still expensive and of low image quality compared to modern devices. For example, in 1998 Kodak released its DC260 camera, which was capable of taking images of over 1 megapixel at a resolution of 1,536 x 1,024 pixels and storing them in compressed JPEG format on a removable CompactFlash memory card.[27] Kyocera's VP-210 was the first commercially available mobile phone with an integrated camera, and was released in Japan in May 1999 with the capability of storing 20 JPEG photographs of 110,000 pixels (0.11 MP) each.[28] As a comparison, Apple's iPhone 15 Pro has a 48 MP camera.[29]

83. In 1999, 56 kbps (or kilobits per second) was the fastest dial-up modem speed possible, due to the underlying technologies used in the telephone system.[30] And even with a 56 kbps modem, download speeds were effectively further limited to 53.3 kbps due to FCC restrictions.[31]

84. Assuming an average compressed JPEG image size of 321 kilobytes (KB, where 1 byte equals 8 bits) for images taken by a DC260 camera,[32] if one such image was placed on a website or sent via email to someone utilizing a 56 kbps modem in 1999, the recipient would require approximately 48 seconds to download that single image alone (and more time if the photo

[27] https://www.imaging-resource.com/PRODS/DC260/DC260Acgi.HTM

[28] http://edition.cnn.com/TECH/ptech/9905/18/japan.phonetv/, https://www.gizmochina.com/2019/06/13/throwback-tech-thursday-we-revisit-the-worlds-first-camera-phone-its-selfie-camera/

[29] https://www.apple.com/iphone-15-pro/specs/

[30] https://www.10stripe.com/articles/why-is-56k-the-fastest-dialup-modem-speed.php

[31] https://www.10stripe.com/articles/why-is-56k-the-fastest-dialup-modem-speed.php

[32] https://toolstud.io/photo/filesize.php?imagewidth=1536&imageheight=1024

was included with other content or data, or if the modem was not communicating at optimum speeds).[33]

B. The state of networking at the time of the Patents-in-Suit[34]

85. Networks exist whenever two or more computing devices are connected to communicate with each other. Networks consist of nodes, which are devices connecting to the network, some type of transmission medium (wired or wireless), and equipment to facilitate such transmissions.

86. One of the more basic types of equipment found on networks is the switch. A switch is basically an intelligent hub; it works and looks exactly like a hub, with one significant difference. When a switch receives a packet, it sends that packet only out the port for the computer to which it needs to go. A switch is essentially a hub that is able to determine where a packet is being sent. It makes this determination based on the MAC (Media Access Control) address, found in the Ethernet header of the packet.

87. The next, more complicated device is a router. A router is similar in concept to a switch, as it relays packets; but it is more advanced. A router directs traffic based on the IP address found in the IP header of a packet based on routing tables. You can program most routers and control how they relay packets. Most routers have interfaces that allow you to configure them. More robust routers also offer more programming possibilities. The specifics of how you program a router are different from vendor to vendor, and there are entire books written on just programming routers. Also, unlike when using a hub or switch, the two networks connected by a router are still separate networks.

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33 (321 kilobytes * 8 bits/byte) / 53.3 kilobits per second = 48.2 seconds.

34 This section is adapted from my published book, Computer Security Fundamentals (5^{th} ed., 2023).

88. A multilayer switch is an enhanced switch designed to perform functions beyond the capability of a basic switch. For example, a basic switch makes decisions about routing packets based on IP addresses. However, a multilayer switch can make decisions about a packet's route based on packet content. The multilayer switch can inspect the content of a packet to determine the type of material being downloaded. If a user is downloading a large number of multimedia packets containing video or music content, the switch can limit the amount of network bandwidth allocated to that user. A bandwidth tester can be used to determine how much bandwidth a given user has available.

89. The cable connection used with traditional Network Interface Cards also called NICs (meaning not wireless) is an RJ-45 connection (RJ is short for Registered Jack, which is an international industry standard). In contrast to the computer's RJ-45 jacks, standard telephone lines use RJ-11 jacks. The most obvious difference between RJ-11 and RJ-45 involves the number of wires in the connector, also called the terminator. Phone lines have four wires (though some have six wires), whereas RJ-45 connectors have eight wires. This standard connector jack must be on the end of the cable. The cable used in most networks today is a Category 5 or Category 6 cable, abbreviated as Cat 5 cable or Cat 6 cable. The specifications for cable are laid out in ISO/IEC 11801. The following table summarizes these cables:

Category	Specifications	Uses
1	Low-speed analog (less than 1MHz)	Telephone, doorbell
2	Analog line (less than 10MHz)	Telephone
3	Up to 16MHz or 100Mbps (megabits per second)	Voice transmissions

4	Up to 20MHz/100Mbps	Data lines, Ethernet networks
5	100MHz/100Mbps	Most common a few years ago; still widely used
6	1000Mbps (some get 10Gbps)	Most common type of network cable
6a	10Gbps	High-speed networks
7	10Gbps	Very high-speed networks
8	40Gbps	Very high-speed networks

90. At the time of the Patents-in-Suit, wireless networking was already becoming popular. The Institute of Electrical and Electronics Engineers (IEEE) standard 802.11 provides guidelines for wireless networking. Various letter designations are used to denote different wireless speeds. The various wireless speeds, starting from the oldest to the most recent, are listed here:

a. 802.11a: This was the first widely used Wi-Fi. The 802.11a standard operates at the 5-GHz frequency and has a maximum data rate of 54 Mbps. An 802.11a device may use lower data rates of 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps, and 6 Mbps. At the 5-GHz frequency, 802.11a networking devices are not susceptible to interference from devices that cause interference at the 2.4-GHz frequency range. Devices compatible with the 802.11a standard are incompatible with 802.11b and 802.11g devices. Also, 802.11a devices use a higher frequency than 802.11b or 802.11g devices. The higher frequency cannot penetrate materials such as building walls like lower-frequency devices can. This results in 802.11a

devices having a shorter range when compared with 802.11b, 802.11g, and 802.11n devices. This was introduced in 1991.

b. 802.11b: The maximum data rate for 802.11b is 11 Mbps. When the highest rate cannot be achieved because of distance or radio interference, a lower rate is automatically selected. The lower rates are 5.5 Mbps, 2 Mbps, and 1 Mbps. An 802.11b device can operate over any of 11 channels within the assigned bandwidth. When communicating between wireless devices, all devices should use the same channel. When using devices from the same manufacturer, the same channel is automatically selected by default. Two wireless networks, one constructed of 802.11b devices and the other constructed of 802.11a devices, can coexist without interfering with each other because they use different assigned frequencies. This allows for two different wireless networks to operate within the same area without interfering with each other. This was introduced in 1997.

c. 802.11g: This standard includes backward compatibility with 802.11b. 802.11g has an indoor range of 125 feet and a bandwidth of 54Mbps. This was introduced in 2000.

d. The IEEE 802.11g standard followed the 802.11a and 802.11b standards. The 802.11g standard operates in the 802.11b frequency range of 2.4 GHz, which makes it downward compatible with 802.11b devices. When communicating with 802.11b devices, the maximum data rate is reduced to 11 Mbps. The maximum throughput for the 802.11g standard is 54 Mbps, but the maximum distance is typically much shorter than an 802.11b device. An 802.11g device can use the lower data rates of 48 Mbps, 36 Mbps, 28 Mbps, 24 Mbps, 12 Mbps, 11 Mbps, 9 Mbps, 6 Mbps,

5.5 Mbps, 2 Mbps, and 1 Mbps. Since 802.11g is assigned to the same frequency range as 802.11b, it is susceptible to the same sources of radio interference. 802.11g and 802.11b devices are not compatible with 802.11a devices because they use different frequencies. It must be noted that while the standards are different, there are devices on the market that can communicate with any of the wireless standards mentioned. In other words, there are wireless devices that can communicate with 802.11a, 802.11b, and 802.11g devices. This was introduced in 2003.

e. There have been further advances, but those are not relevant to the time of the Patents-in-Suit.

91. There are different types of network communications for different purposes. The different types of network communications are defined by protocols. A protocol is, essentially, an agreed-upon method of communication. In fact, this definition is exactly how the word protocol is used in standard, noncomputer usage, too. Each protocol has a specific purpose and normally operates on a certain port. Some of the most important, and most commonly used, protocols are listed in the following table:

Protocol	**Purpose**	**Port(s)**
FTP (File Transfer Protocol)	For transferring files between computers.	20 and 21
TFTP (Trivial File Transfer Protocol)	A quicker but less reliable form of FTP.	69
SSH (Secure Shell)	Used to securely connect to a remote system.	22
Telnet	Used to remotely log on to a system. You can then use a command prompt or shell to	23

Protocol	Purpose	Port(s)
	execute commands on that system. Popular with network administrators.	
SMTP (Simple Mail Transfer Protocol)	Sends email.	25
Whois	A command that queries a target IP address for information.	43
DNS (Domain Name System)	Translates URLs into web addresses.	53
HTTP (Hypertext Transfer Protocol)	Displays web pages.	80
POP3 (Post Office Protocol version 3)	Retrieves email.	110
NNTP (Network News Transfer Protocol)	Used for network newsgroups (Usenet newsgroups). You can access these groups over the Web via www.google.com and selecting the Groups tab.	119
NetBIOS	An older Microsoft protocol that is for naming systems on a local network.	137, 138, or 139
IMAP (Internet Message Access Protocol)	More advanced protocol for receiving email. Widely replacing POP3.	143
IRC (Internet Relay Chat)	Used for chat rooms.	194
SMB (Server Message Block)	Used for Windows Active Directory.	445
HTTPS	Encrypted HTTP; used for secure websites.	443
SMTPS (Simple Mail Transfer Protocol Secure)	Encrypted SMTP.	465

Protocol	Purpose	Port(s)
POP3S (Post Office Protocol version 3 Secure)	Encrypted POP3.	995
IMAPS (Internet Message Access Protocol Secure)	Encrypted IMAP.	993

92. With tens of thousands of networks and millions of individual computers communicating and sending data, a predictable problem arises. That problem is ensuring that the data packets go to the correct computer. This task is accomplished in much the same way as traditional "snail" mail letter is delivered to the right person: via an address. With network communications, this address is a special one, referred to as an "IP" address. An IP address can be IP version 4 or version 6.

93. An IP version 4 address is a series of four values, separated by periods (an example would be 107.22.98.198). Each of the three-digit numbers must be between 0 and 255; thus, the address 107.22.98.466 would not be valid. These addresses are actually four binary numbers; you just see them in decimal format. Since each of these numbers is really just a decimal representation of 8 bits, they are often referred to as octets. Thus, there are four octets in an IPv4 address. Recall that a byte is 8 bits (1s and 0s), and an 8-bit binary number converted to decimal format will be between 0 and 255. This yields approximately 4.2 billion unique IP version 4 addresses.

94. IP addresses fall into two groups: public and private. Public IP addresses are for computers connected to the Internet. No two public IP addresses can be the same. However, a private IP address, such as one on a private company network, only has to be unique in that network. It does not matter if other computers in the world have the same IP address because this computer is never connected to those other computers worldwide. Often network administrators use private IP addresses that begin with a 10, such as 10.102.230.17.

95. It should also be pointed out that often an ISP will buy a pool of public IP addresses and assign them to you when you log on. An ISP might own 1000 public IP address and have 10,000 customers. Because all 10,000 customers will not be online at the same time, the ISP simply assigns an IP address to a customer when he logs on, and the ISP unassigns the IP address when the customer logs off.

96. Open Systems Interconnection model (OSI model) is a reference model that describes how networks communicate. It outlines the various protocols and activities, and it tells how the protocols and activities relate to each other. This model is divided into seven layers, and was originally developed by the International Organization for Standardization (abbreviated ISO) in the 1980s.

Layer Number	Layer Name	Description	Protocols
7	Application	This layer interfaces directly to the application and performs common application services for the application processes.	POP, SMTP, DNS, FTP, and so on
6	Presentation	The presentation layer relieves the application layer of concern regarding syntactical differences in data representation within the end-user systems.	
5	Session	The session layer provides the mechanism for managing the dialogue between end-user application processes.	NetBIOS
4	Transport	This layer provides end-to-end communication control.	TCP, UDP
3	Network	This layer routes the information in the network.	IP, Internet Control Message Protocol
2	Data link	This layer describes the logical organization of data bits transmitted on a particular medium. The data link layer is	Address Resolution Protocol, Serial Line Internet

Layer Number	Layer Name	Description	Protocols
		divided into two sublayers: the Media Access Control (MAC) layer and the Logical Link Control (LLC) layer.	Protocol, Point-to-Point Protocol
1	Physical	This layer describes the physical properties of the various communications media as well as the electrical properties and interpretation of the exchanged signals. In other words, the physical layer is the actual NIC, Ethernet cable, and so forth. This layer is where bits are translated into voltages and vice versa.	None

97. The Data Link layer is the OSI layer that describes how raw data is packaged for transfer from one network interface card to another. The Data Link layer also contains information such as the source and destination addresses and the size of the packet. The Data Link layer also provides error checking. When you think of the Data Link layer, think of placing all the data in an orderly sequence of 1s and 0s with a definite beginning and end to each packet.

98. The Physical layer is the OSI layer at which a user sees something tangible and consists of the cable and connectors used for constructing the network. The Physical layer is the lowest layer of the model. It is important to note that not all hardware works at the Physical layer, but hubs, network interface cards, and cables do. This layer is only concerned with how digital signals—the binary 1s and 0s—are carried electrically from one networked device to another. The Physical layer is where actual raw bits are transmitted, regardless of transmission medium. When you think of the physical layer, think of cables, radio waves, or light pulses.

99. The Data Link layer, or Layer 2, is divided into two sublayers. Those layers are the logical link control (LLC) and media access control (MAC). The MAC sublayer should look familiar because this is where the MAC address comes from.

100. The MAC sublayer is concerned with accessing the network medium and converting the contents of a transmission into a serial stream of bits that will be transmitted to a device. A general rule is that anything that directs traffic based on the MAC address operates at the Data Link layer. According to that logic, a traditional switch (not an upper-layer switch) operates at Layer 2.

101. The MAC sublayer converts the transmission and its contents into a series of digital pulses to be carried on the media. According to IEEE, the primary functions performed by the MAC layer include:

A. frame delimiting and recognition;

B. addressing of destination stations;

C. conveyance of source-station addressing information;

D. transparent data transfer of LLC protocol data units (PDUs), or of equivalent information in the Ethernet sublayer;

E. protection against errors; and

F. control of access to the physical transmission medium.

In the case of Ethernet, the functions required the MAC sublayer include:

A. receiving and transmitting normal frames;

B. half-duplex retransmission and backoff functions;

C. appending and checking frame check sequence (FCS);

D. enforcing interframe gap;

E. discarding malformed frames;

F. prepending (tx) and removing (rx) preamble, start frame delimiter (SFD), and padding; and

G. ensuring half-duplex compatibility: appending (tx) and removing (rx) MAC address.

102. The Network layer, also called Layer 3, is primarily responsible for addressing and navigating networks by using generated IP addresses. When you think of the Network layer, think of navigating between networks, or routing. Routing prevents or limits network congestion. It also can prioritize the transmission of packets. As packets are transmitted from one network to another, several different routes may be used.

103. The IP protocol works at this layer. That is one reason why IP addresses are also called logical addresses. Any device that directs traffic based on the IP address is operating at the network layer. Routers are a good example of devices operating at the Network layer.

104. By itself, the IP protocol is connectionless/unreliable. For now, understand that the IP protocol simply designates an address to send packets to and does nothing to ensure the transmission is received. That responsibility is instead handled by the Transport layer. Some protocols associated with the Network layer include Address Resolution Protocol (ARP), Reverse Address Resolution Protocol (RARP), Internet Control Message Protocol (ICMP), Internet Group Management Protocol (IGMP), and Link Layer Discovery Protocol (LLDP).

105. The Transport layer, also called Layer 4, is the OSI layer responsible for ensuring reliable data by sequencing packets and reassembling them into their correct order. Packets are transmitted over many miles using different routes. The packets may not arrive in the same sequence in which they were transmitted, so they often require reassembly into their correct order. Reassembly into the correct order is especially important in transmitting digital images. When you think of the Transport layer, think of packet quality.

106. Both TCP and UDP protocols operate at this layer. In the case of TCP, the receipt of packets is confirmed, and unconfirmed packets are resent. With UDP, packets are simply sent without confirmation that they arrived. However, both protocols are responsible for packet delivery; as such, both are working at the Transport layer.

107. The integrity of the data is checked at Layer 4. This error check is more advanced than what is performed in the LLC sublayer. Here, the contents and proper sequence of frames are checked to ensure the data will be reassembled in the correct order at the destination. The Transport layer is also where port numbers are inserted into segments. Port numbers are assigned in the Session layer, and IP addresses are assigned in the Network layer. Together, the port number and IP address form what is known as a socket.

108. Layer 4 is also concerned with the order of delivery. Since packets might take different paths through a network, it is important to see that they are assembled in the correct order at the destination. The Transport layer also assists in avoiding congestion of network traffic.

109. The Session layer, or Layer 5, establishes a connection between two different computers and provides a complete conversation context. A session is a temporary, interactive exchange of information between two computing devices. Think about a phone call. You initiate the call, then you may spend some time speaking back and forth until the call is ended. Similarly, the Session layer is responsible for ensuring that a communication session stays open until it is terminated by a user.

110. The Session layer determines the correct virtual connection by matching the port number of the service required to support the layers above it. For example, when connecting to a distant location, not only does the IP address need to be enclosed in the packet, but the port number that corresponds with the provided service must also be enclosed. If the requested port number is

busy, the Session layer determines if the connection can wait or if another port number can be assigned.

111. Communication between two hosts must be synchronized, meaning each host must recognize the other is ready either to communicate or end the session. Properly ending a session is important because the connection must be released at both ends so the port addresses are free for future communication. Therefore, each computer must be notified when the session is over. To do this, the Session layer regularly checks if both hosts desire to continue communicating, thus resynchronizing them.

112. Layer 5 is also where differences in programming mechanics or code are worked out for communicating between two nodes in the same network or distant networks. The Session layer solves problems, such as how to establish a connection between nodes on the same system architecture and diverse architecture.

113. The Session layer can be involved in authentication and authorization. Authentication logically occurs here because parties need to be authenticated when establishing a session. A few protocols that operate at Layer 5 include L2TP (used in VPNs), Remote Procedure Call (RPC), Session Control Protocol (SCP), and Telnet.

114. The Presentation layer, or Layer 6, is the OSI layer that ensures character-code recognition. It is responsible for converting character codes into a code that is recognizable by a computer that uses a different character code. For example, Extended Binary Coded Decimal Interchange Code (EBCDIC) is widely used on mainframes, while most PCs use ASCII. EBCDIC uses numbers to represent characters similar to the way ASCII number codes represent character codes. When a PC communicates with a mainframe, the ASCII code must be converted to

EBCDIC. When you think of the Presentation layer, think of how the data must look for both parties to interpret or understand it.

115. The Presentation layer works hand-in-hand with the application layer. Layer 6 is responsible for formatting and delivery of data to layer seven. Additionally, encryption is often done, at least in part, at this layer.

116. The Application layer should not be confused with general software applications such as spreadsheet, word-processing, and database programs. The Application layer, Layer 7, is the OSI layer that interfaces directly with and performs common application services for the application processes. It works with specific networking applications such as web browser programs, file transfer programs, and e-mail. When you think of the Application layer, think of establishing communication with the network.

117. Layer 7 can be considered the location of networking-specific applications. For example, a number of protocols operate at this layer, many of which will seem familiar. These protocols include Simple Mail Transfer Protocol (SMTP), Transport Layer Security (TLS), Lightweight Directory Access Protocol (LDAP), and others.

118. While the OSI Model is commonly used, the TCP model has been used as well. The TCP model has four layers. It does the same activities that the OSI model does, but compresses into fewer layers. The following table shows the TCP model:

Layer	Purpose
Application Layer	This layer combines the responsibilities of the application and presentation layers of the OSI model.
Transport Layer	This layer is roughly equivalent to the transport and session layers of the OSI model. This layer is responsible for message delivery and error detection.

Layer	Purpose
Internet Layer	This layer is responsible for traffic going from source to destination. It is roughly equivalent to the network layer of the OSI model.
Network Access Layer	This is roughly equivalent to the physical and data link layers of the OSI model. This layer is responsible for transmission of the actual signals.

VI. THE PATENTS-IN-SUIT

A. General Features of the Patents-in-Suit

119. The Patents-in-Suit are a series of continuations that share a common specification that explains certain inventive aspects of the display devices,[35] apparatuses and/or systems covered by the differing claim scopes of the Patents-in-Suit.[36] First, the display devices of the Patents-in-Suit are not simple computer monitors. As will be discussed in the following sections, the display devices of the Patents-in-Suit are self-configuring, and can work automatically, including, depending on the particular claim, automated initial setup/configuration processes, obtaining new content for display, performing client-server authentication, and obtaining and installing updates. Additionally, the systems recited in the claims of the ’573 Patent included a server system and a separable user interface that allowed users to easily add/upload new images

[35] Although each of the Patents-in-Suit claims some form of display device, the specific claimed features vary from patent to patent. For example, the ’573 Patent claims recite either a “frame device” or a “digital picture frame,” the ’930 patent claims recite a “digital display apparatus,” the ’656 patent claims recite a “display device for displaying image data,” and the ’652 patent claims recite an “apparatus for displaying content.” I use the term “display device” to include each of the particular display devices recited by the different patent claims, with the understanding that the display devices claimed by different claims may have different particular claimed features.

[36] Only the ’573 Patent includes system claims. The claims of the ’930, ’656 and ’562 patents are apparatus claims.

via the separable user interface and the images would then be obtained periodically by the display devices via automatic requests to the server made by the display devices. This ease of use received substantial industry praise, as is further discussed herein in Section X ("Secondary Considerations"). Below I detail certain descriptions of the common specification of the Patents-in-Suit, and then discuss each one of the Patents-in-Suit to emphasize how the claims of each one of the Patents-in-Suit cover differing inventive scopes/aspects of the systems, devices, and apparatuses of the Patents-in-Suit.

120. I also note that Dr. Johnson characterizes the Patents-in-Suit as follows: "The asserted patents generally relate to displaying pictures in digital picture frames." Johnson ¶66. A POSITA reading the Patents-in-Suit would immediately understand that such a characterization is a gross over-simplification of the Patents-in-Suit.

121. The display devices of the Patents-in-Suit were in stark contrast to competing products of the time that could display digital images. Those products were either non-connected displays that obtained images for display from inserted storage media or were just general purpose desktop or laptop computers that were inappropriate and difficult to use for displaying photographs and other digital images.

122. The Patents-in-Suit also disclose that the inventive display devices were configured to be able to request and receive images via a network from a repository. This was a pioneering step in technology to what we would now describe as "cloud storage." In 2023, most users are accustomed to their data being on a cloud. If you should lose or break your smartphone, tablet, or laptop, you need not be concerned about your data being lost as it is backed up to a cloud repository such as iCloud, Microsoft OneDrive, Google Drive, etc. However, at the time of the inventions of

the Patents-in-Suit, cloud storage was not common and other previously existing products did not have this feature.

123. Previously existing digital image display products required manual removal of images and/or manual addition of new images, such as via insertable and removable storage media. In order to update images, these previously-existing display devices required: (1) manual removal of the memory card from associated hardware of the display device, (2) insertion of the memory card into a card reader connected to a computer separate from the display device, which needed (i) loading of the correct software onto the computer, (ii) manually locating the data to load onto the memory card, (iii) formatting the files using the correct file structure and file type, (iv) copying the data onto the memory card, and then (3) receipt of the memory card back into the display device.

124. That process had to be repeated each time for the display device to display any new digital content. Moreover, these previously existing digital picture frames could not be remotely controlled, configured, or updated with new software. Consequently, these devices tended to remain static after initial manual setup, since introducing new software or providing software updates was infeasible. Due to the tedious and complicated processes in which the devices could receive new digital content, new digital content was unlikely to be received by the device after a first batch of content was provided at or near in time to initial setup of the device, leaving the device to cycle through the same initial content during its course of use. The Patents-in-Suit include a detailed description of these problems with existing products. ’573 Patent at 1:20-6:30.

125. The Patents-in-Suit specifically describe one exemplary prior product: the Sony PHD A55 CyberFrame. The Patents-in-Suit explain:

> However, there are several problems associated with this device. For example, the device lacks the ability to dynamically obtain image data from a networked data

> source and then display that data according to criteria established by an authorized user. The device shown in FIG. 1a consists of a display 100. Display 100 is an active matrix LCD screen configured to display digital video data and still image data. The data shown on display 100 is obtained from storage media 103. Storage media 103 is a memory medium capable of storing video and/or image data (e.g., a Memory Stick™).
>
> . . .
>
> A problem with prior art mechanisms, such as the one illustrated in FIG. 1a, is that the user must physically provide storage media 103 to the device. Thus, a person who does not have physical access to the device cannot introduce new images into the device. Moreover, the device cannot be controlled from a remote location. For example, making changes to a website cannot control the behavior of the control mechanism.
>
> A further problem is that the functions offered by control mechanism 109 cannot be remotely updated, modified, or otherwise changed. For example, a new feature, such as the ability to obtain new images from a network, cannot be added by transmitting a Software update to the device from a remote source. The device illustrated in FIG. 1a is isolated from other devices and therefore does not have the ability to communicate with Such devices over a telecommunication medium.
>
> Another limitation inherent in the design of the prior art device is that the device cannot automatically receive different types of image data. For example, the device cannot obtain different types of image data via an image delivery Service. The user of the device illustrated in FIG. 1a cannot elect to periodically receive information relating to a particular topic Such as the weather report. Computer networks are a prior art mechanism used to propagate data to devices connected to the network. The following Section describes several techniques used to send and receive data across such computer networks and explains the limitations and disadvantages associated with such techniques.

’573 Patent at 1:49-58, 2:15-44.

126. While cloud storage and device auto-configuration and updating may seem commonplace today, it is important to view patents from the lens of a POSITA at the time of the effective filing date of the Patents-in-Suit: December 1999.

127. The digital display devices of the Patents-in-Suit also included the capability of server authentication. This is another feature that may seem commonplace for smart devices such as phones and tablets in 2023, but was innovative for a digital display device at the time. In the

1990s, while some websites used Secure Sockets Layer ("SSL") encryption, digital display devices of the time did not have the ability to implement SSL, nor did they incorporate any other authentication of the source of the digital images they received (i.e., by inserting removable media).

128. The display device described in the Patents-in-Suitwas internet-connected and enabled remote updating of photos from the repository without requiring physical interaction with the display device. '573 Patent at 6:33-61. The display device simply needed a connection to a power source and a communications network (at that time, typically a telephone line), and the display device, using a unique identifier, would automatically and securely connect to the data depository, perform authentication steps, update existing software and data (including downloading any newly shared digital images), and then display updated images on the device. '573 Patent at 6:50-58, 9:30-10:35, 17:30-19:3.

129. Content and display device behavior characteristics could be remotely provided using a separate user interface, e.g. the "picture box" example embodiment disclosed in the Patents-in-Suit, accessed via a web browser. '573 Patent at 6:62-7:1. Once new images or preferences were provided via the separate user interface, upon the display device's next automatic connection to the repository, the new images would be downloaded and displayed on the display device, and the display device would operate using the updated preferences. '573 Patent at 7:12-49. "Thus, the display device is self-aware and requires only a minimal amount of input from the user." '573 Patent at 6:48-50.

130. Figure 2A provides a block diagram of the components in one embodiment of the invention:

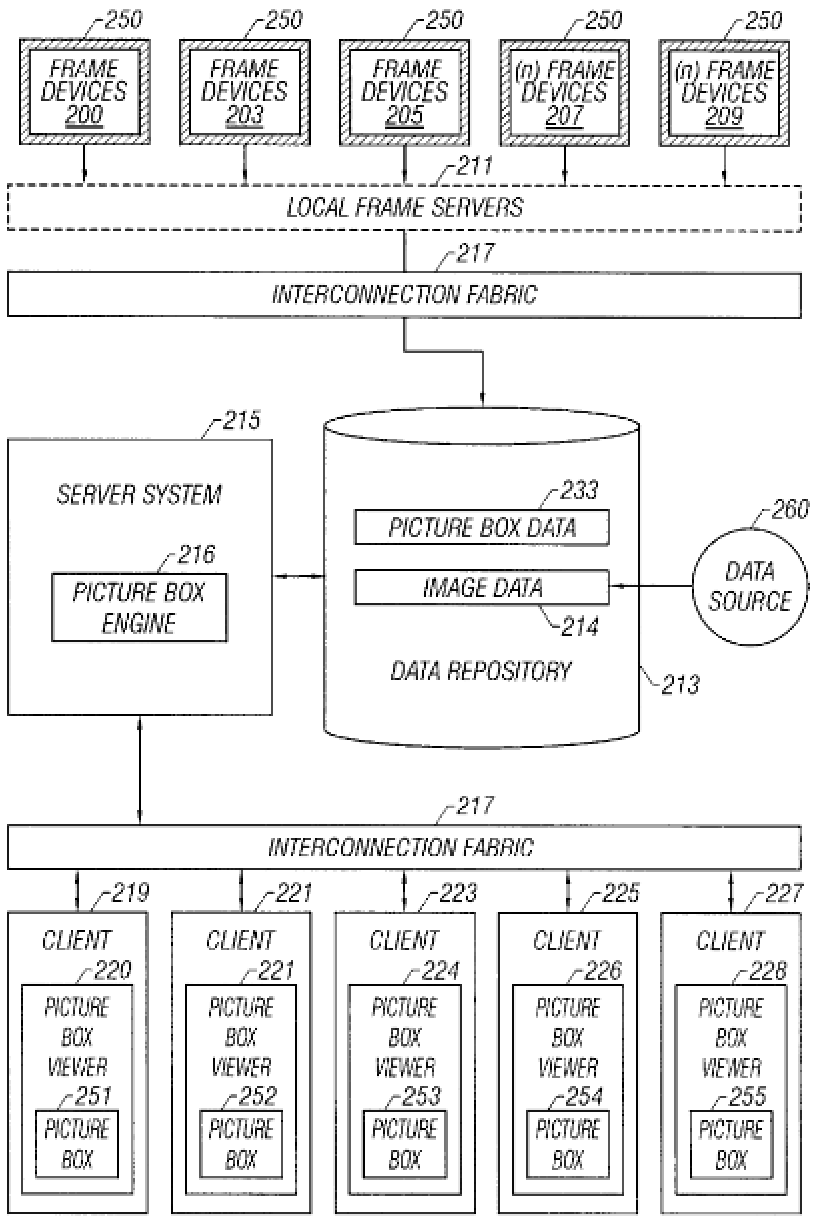

FIGURE 2A

131. Figure 3 is a block diagram showing internal components of an example embodiment of the display device, and Figure 4 is a block diagram showing an architecture for the repository:

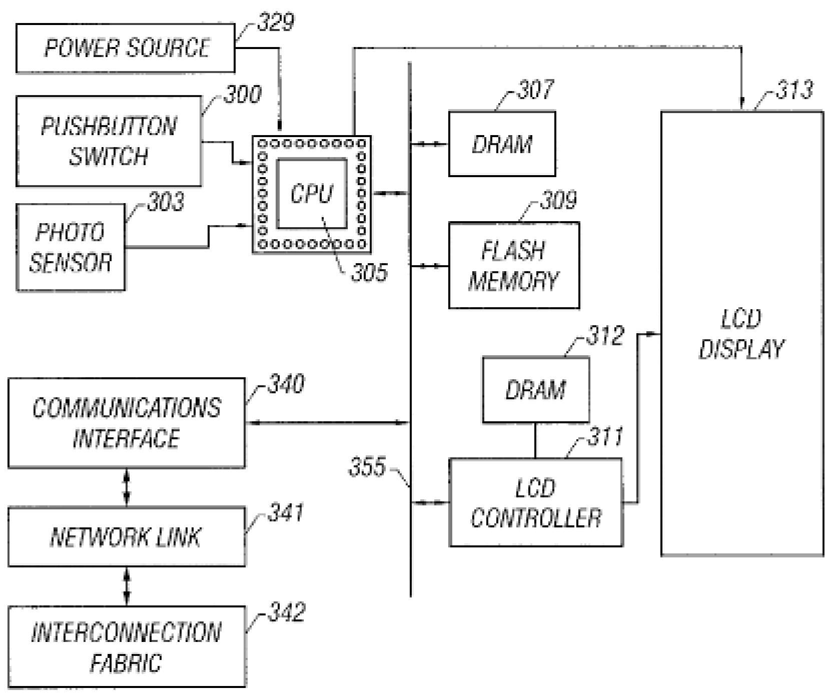

FIGURE 3

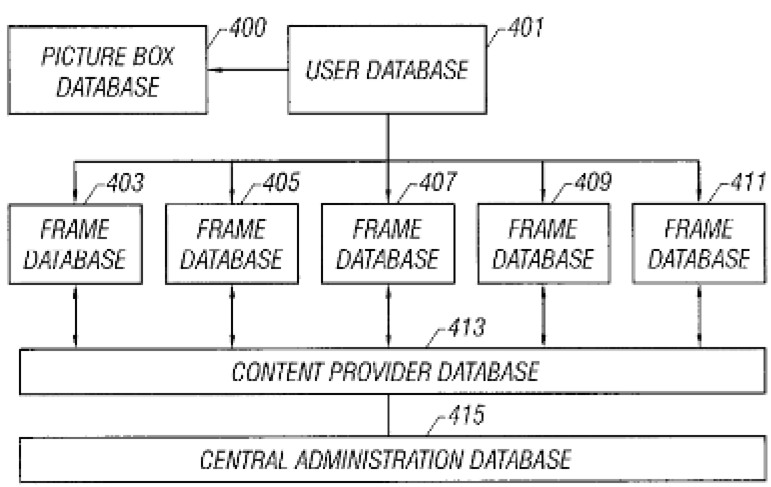

FIGURE 4

132. Figures 8 and 9 are flow charts depicting how an embodiment of the display device automatically connects to the repository to retrieve image data and behavior characteristics:

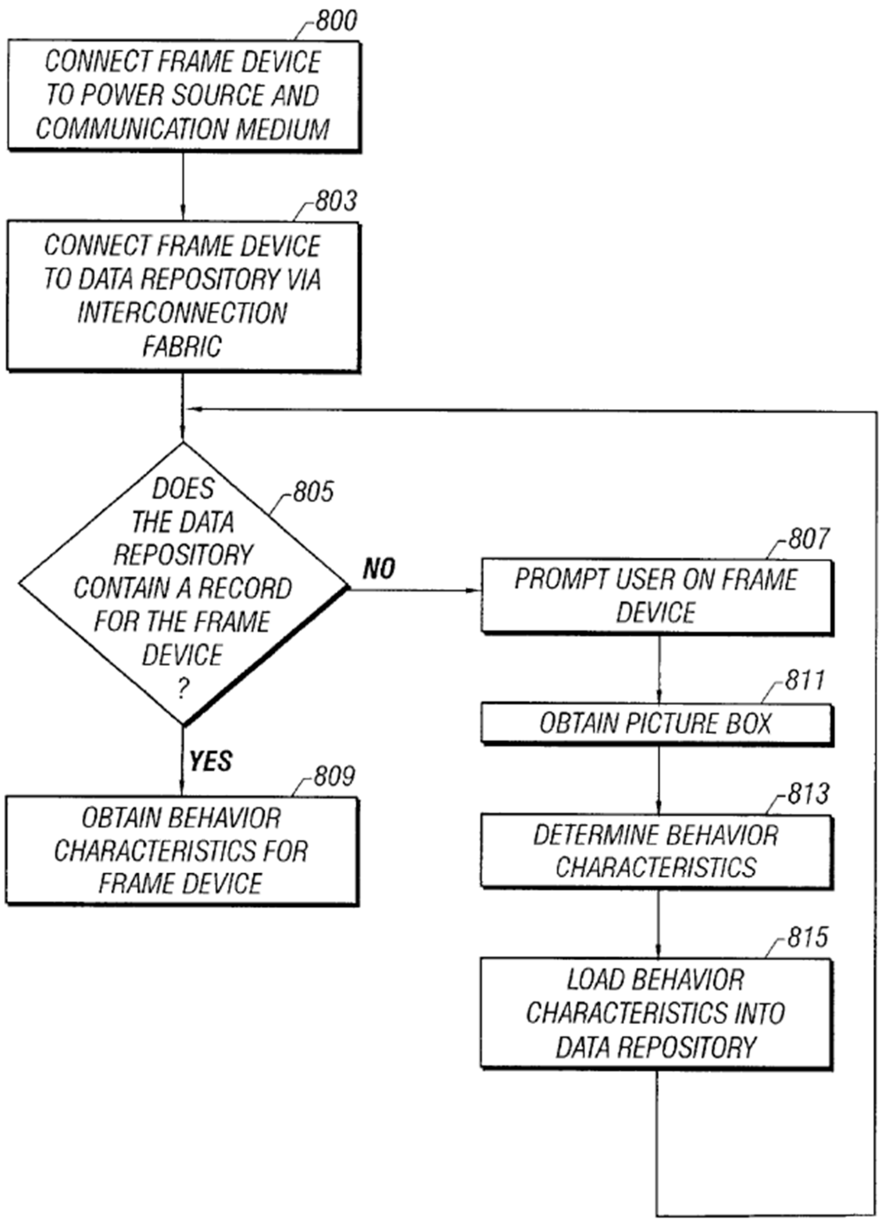

FIGURE 8

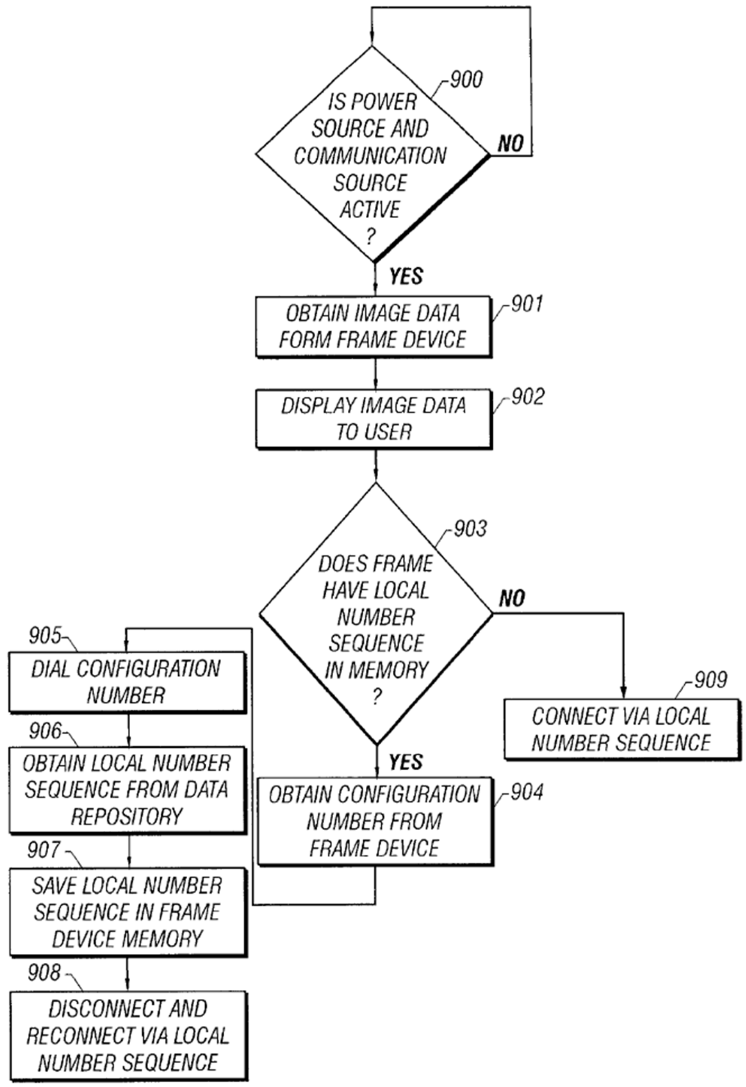

FIGURE 9

133. The figures and descriptions in the Patents-in-Suit provide a detailed explanation of how embodiments of the display device can operate "without input from the user." '573 Patent at 9:31-43, 10:10-15, 25:24-26, 28:4-47. Significantly, the display device of the Patents-in-Suit could, among other things, automatically: (1) initiate secure communications over a network with a remote server computer system, (2) perform authentication, (3) download new images and software updates from the server and store them in the display device's memory, and (4) display those images on the digital display device's display screen. The display device of the

Patents-in-Suit thus overcame deficiencies of then-existing digital display devices, providing an improved solution for displaying and sharing digital images by automatically receiving software updates and obtaining digital images (including those provided by any authorized user) from a remote repository. Among other benefits, these innovative features allowed for remote control of images displayed and software installed on the display devices after sale. For example, the '573 Patent describes in examples how the invention enables not only the display device owner to remotely upload images to be displayed on the display device, but also enables other authorized users to provide "images and/or data to the system such as a gallery provider, channel provider, and/or advertisement provider." '573 Patent at 16:13-16. By way of illustration, the system may be configured such that it "regularly delivers images that illustrate weather reports, art collections, greeting cards, movie posters, post cards, live camera data, or any other type of customized data to the user's display device." '573 Patent at 14:57-60. The ability to remotely control and update images and software running on the device allows for ongoing engagement with the user, for example, by delivering interesting or valuable content, such as advertisements, to the user on the display device's display screen.[37]

134. As described below, the claims of each of the Patents-in-Suit are directed to these and other improved features.

---

[37] This is supported by the explicit recitation in the patent specification that the term "user" to whom benefits of the invention flow includes an "advertisement provider" (as well as "gallery provider" and "channel provider"): "The term user as described herein has multiple meanings.… The purchaser or buyer of a frame device may also be referred to as a user. A person who provides images and/or data to the system such as a gallery provider, channel provider, and or advertisement provider is also considered a user of the system. Thus, the term user is intended to be a general term that has *multiple* meanings. A single person or entity may function as multiple users and multiple people may function as one or more users." *E.g.*, '573 Patent at 15:61-16:19 (emphasis added).

B. The '573 Patent

135. The '573 Patent issued from Application No. 09/458,849 and was filed on December 10, 1999. The '573 Patent issued on August 27, 2002.

136. The claims of the '573 Patent cover a system for distributing image data that includes certain ones of the multiple improved features described in the specification, including, depending on the specific claim, "at least one frame device configured to operate according to preferences comprising an image display list defined by a user," "a user interface coupled to at least one server system" that is "physically separable from" the frame device, the server system that "generate[s] package data" comprising "image data" and "preferences," and "periodically relay[s] said package data comprising said image data and said preferences to said at least one frame device when and in response to said at least one frame device automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences," and the frame device that "authenticate[s] said at least one server system before storing said image data and said preferences." '573 Patent at Claim 2.

137. The claim language clearly describes the improved features of the system (such as automatically and periodically distributing image data and authenticating the server system), the components of the system (such as at least one frame device and a server system), how components are configured (such as according to user preferences), the role of the server system (such as periodically relaying image data and preferences), the ability to remotely control the images displayed by and the software running on the frame device.

138. Based on the detailed descriptions of the inventions and the claims in the '573 Patent, a POSITA would readily recognize that the '573 Patent is novel and clearly an improvement over the prior art.

C. The '930 Patent

139. The '930 Patent issued from Application No. 10/179,732 and was filed June 24, 2002. The '930 Patent issued on December 1, 2015. The '930 Patent is a continuation of Application No. 09/458,849, filed on December 10, 1999 (the '573 Patent).

140. The claims of the '930 Patent cover a digital display apparatus having an integrated housing that includes certain ones of the multiple improved features described in the specification, including a memory comprising "security information comprising authentication information for a first remote server system and a unique identifier for said digital display apparatus, and a current version of onboard software," "an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region," "a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files," "an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system," and "a software update function configured to obtain an updated version of said onboard software from said server and to replace said current version of said onboard software in said memory with said updated version." '930 Patent at Claim 1.

141. The claim language clearly describes the improved features of the digital display apparatus (such as comprising software for automatically initiating communications with the server system to send requests for image data, authenticating the server system, and performing automatic software updates), the components of the display apparatus, how components are configured (such as according to onboard software), as well as details of the digital displace device

(such as an image display region on an outside surface of the integrated housing, a memory in an inside of the integrated housing that comprises image data, security information, the unique identifier, and the current version of the onboard software, a processor, and communications circuitry).

142. Based on the detailed descriptions of the inventions and the claims in the ’930 Patent, a POSITA would readily recognize that the ’930 Patent is novel and clearly an improvement over the prior art.

D. The ’656 Patent

143. The ’656 Patent issued from Application No. 11/927,520 and was filed October 29, 2007. The ’656 Patent issued on September 1, 2015. The ’656 Patent is a continuation of Application No. 10/179,732 filed on June 24, 2002 (the ’930 Patent), which is a continuation of Application No. 09/458,849 filed on December 10, 1999 (the ’573 Patent).

144. The claims of the ’656 Patent cover a display device that includes certain of the multiple improved features described in the specification, including comprising software configured to cause the display device “upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system,” where the communication session includes “sending a request for image data to said server system,” “receiving image data and authentication information from said server system in response to said request,” “authenticating said server system,” “displaying said image data on said display screen,” and “automatically updating said computer readable instructions for controlling the operation of said display device.” ’656 Patent at Claim 1. The claims further recite comprising software for instructing the server system to create an “interface accessible by a web browser for managing behavior characteristics of said display device.” ’656 Patent at Claim 1.

145. The claim language clearly describes the improved features of the display device (such as software for automatically initiating a communications session with the server system upon the display device being connected to a power source and a communications source without needing any user input to do so, wherein, during the automatically initiated communications session, the display device can send requests for image data and receive the image data, authenticate the server system, and automatically receive and update its computer readable instructions, as well as instructing the server system to create an interface for managing behavior characteristics of the display device), the components of the display device, how components are configured (such as according to user preferences), and the ability to remotely control the images displayed by, and the software running on, the display device.

146. Based on the detailed descriptions of the inventions and the claims in the ’656 Patent, a POSITA would readily recognize that the ’656 Patent is novel and clearly an improvement over the prior art.

E. The ’562 Patent

147. The ’562 Patent issued from Application No. 14/802,218 and was filed July 17, 2015. The ’562 Patent issued on May 16, 2017. The ’562 Patent is a continuation of Application No. 11/927,520 filed October 29, 2007 (the ’656 Patent), which is a continuation of Application No. 10/179,732 filed on June 24, 2002 (the ’930 Patent), which is a continuation of Application No. 09/458,849 filed on December 10, 1999 (the ’573 Patent).

148. The claims of the ’562 Patent cover an apparatus for displaying content comprising image data received from a server system via a communications network on a display screen that includes certain ones of the multiple improved features described in the specification, including a memory comprising “a unique identifier for said apparatus, computer readable instructions different from said content for controlling the operation of said apparatus, and a version identifier

for said computer readable instructions," the computer readable instructions including instructions for causing the apparatus to perform the steps of, "upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network," "sending by said apparatus said unique identifier to said server system," "sending by said apparatus said version identifier to said server system," "receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system," "updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions," and "receiving by said apparatus updated content from said server system." '562 Patent at Claim 1.

149. The claim language clearly describes the improved features of the apparatus (such as storing a unique identifier for the apparatus and a version identifier for its current software, the software comprising instructions for causing the apparatus to perform the steps of initiating a communications session with the server system upon connection to a power source and a communications source, sending the unique identifier and version identifier to the server system, prompting the server system to create an account, receiving from the server system updated computer readable instructions and updating the computer readable instructions of the apparatus, receiving updated content from the server system), the components of the apparatus, how components are configured (such as according to computer readable instructions), as well as other details of the apparatus (such as a central processing unit, a video controller, and a communications interface).

150. Based on the detailed descriptions of the inventions and the claims in the '562 Patent, a POSITA would readily recognize that the '562 Patent is novel and clearly an improvement over the prior art.

F. Prosecution Histories of the Patents-in-Suit

151. I have reviewed the U.S. Patent Office prosecution records ("file histories") of the Patents-in-Suit. Summaries of some salient facts from those file histories are set forth below.

1. The Original Patent Application

152. Each of the Patents-in-Suit is based on U.S. Application Serial No. 09/458,849 filed on December 10, 1999 (the "Original Application"). The Original Application was filed in the names of the inventors Dean Schiller and Paul Yanover as the applicants. Mr. Schiller and Mr. Yanover assigned the Original Application to Ceiva Logic, Inc. on April 30, 2002.

2. The '573 Patent

153. The prosecution of the Original Application directly led to the issuance of the '573 Patent. When filed, the Original Application included 43 claims divided into four claim families. The claim family relevant to the current litigation is the family that consisted of independent claim 1 and dependent claims 2-10. Independent claim 1 recited:

1. A system for distributing data comprising:

    one or more frame devices configured to operate according to behavior characteristics, said one or more frame devices each having a border region modeled to resemble a traditional picture frame;

    a data repository having image data;

    an interconnection fabric coupled to said one or more frame devices, said interconnection fabric configured to relay said image data from said data repository to said one or more frame devices when said one or more frame devices automatically issues a request for said image data.

154. On May 7, 2001, the USPTO examiner issued a non-final office action rejecting independent claim 1 (and some of the dependent claims) based on WO 99/54663, an international

patent application published in April 2004 owned by Hagiwara Sys-Com ("Hagiwara"), alone or in combination with another published international patent application (WO 92/05657, "Philips"). The Examiner noted that "Applicant has chosen to claim 'interconnection fabric' in lieu of network. 'Interconnection fabric' is deemed broader than a network, and this 'broadest reasonable interpretation' includes the connection buses connecting storage means 21 to CPU 31 of [Hagawara], even though a 'network' is not disclosed *per se*."

155. The examiner also, under "General Remarks," stated:

> Notwithstanding Applicant's invention as described in the specification, it is believed that Applicant has failed to draft claims around photo screensavers operating on a computer. Many monitors meet the limitation of "traditional frames." The Examiner is personally aware that it was notoriously well-known to distribute photos via e-mail and that it was notoriously well-known to employ photos as screensavers before Applicant's invention.

156. The examiner also cited, but did not apply, the international counterpart patent application (W00/29960) for the parent application of the later Bandaru continuation-in-part application (U.S. Pat. No. 7,155,679) being relied upon by Amazon in its infringement allegations ("Bandaru").

157. In response to the May 7, 2001, office action, the applicants, via an amendment and response filed January 16, 2002, amended independent claim 1 to read:

> 1. (ONCE AMENDED). A system for distributing image data comprising:
>
> at least one frame device configured to operate according to preferences defined by a user, said at least one frame device comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs;
>
> a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device and

configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system:

said at least one server system coupled to said at least one frame device via said network, wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data.

158. The Patent Office issued a notice of allowance on March 22, 2002. The patent examiner did not provide any reasons for allowance. The ’573 Patent issued August 27, 2002, with Claims 1-17.

3. The ’573 Patent Reexamination

159. On October 10, 2008, Frame Media, Inc. (“Frame Media”), an entity that Ceiva was suing for infringement of the ’573 Patent, filed an initial request with the U.S. Patent Office asking the Patent Office to reexamine all claims 1-17 of the ’573 Patent. The reexamination request cited 38 asserted prior art references.

160. On January 9, 2009, the Patent Office issued a notice of incomplete *inter partes* request, because the “request is not clear as to the proposed rejections that are being set forth, because it lumps together the proposed rejections, and therefore, fails to specifically explain all the proposed rejections being identified by the request.”

161. Frame Media filed an amended request for *inter partes* reexamination on January 26, 2009. The amended request was based on 10 of the 38 prior art references. These prior art references included three of the prior art references that Amazon is re-asserting in the present litigation, namely Bandaru, as well as Muoio (U.S. Patent No. 6,670,934) and Hoyle (U.S. Patent No. 6,771,290).

162. On March 30, 2009, the Patent Office granted Frame Media’s request to re-examine claims 1-5 and 7-17 of the ’573 Patent, but denied the request to reexamine claim 6, finding that

Frame Media had not shown that a substantial new question of patentability exists regarding claim 6.

163. On the same day, Matthew Heneghan, who had been assigned to conduct the patent reexamination, issued an office action rejecting claims 1-5 and 7-17 of the '573 Patent, adopting some of the bases for rejection proposed by Frame Media, but rejecting others. Relevant to the claims at issue in this litigation are the rejections of claims 1-5 and 7.

164. Examiner Heneghan rejected Frame Media's contention that claims 1-5 and 7 were anticipated by Muoio.

165. Examiner Heneghan rejected Frame Media's contention that claims 1-4 are obvious over Bandaru in view of Tomat (U.S. Patent No. 6,784,925).

166. Examiner Heneghan adopted Frame Media's contention that claims 1-5 and 7 were obvious over Muoio in view of Bitetto (U.S. Patent No. 6,975,308).

167. During the reexamination process, there were several actions issued by Examiner Heneghan and various responses from Frame Media and Ceiva, including claim amendments made by Ceiva. Eventually, on May 4, 2010, Examiner Heneghan issued a "Right to Appeal Notice" in which he found that claim 4, as amended, as well as new claim 20, were allowable. In allowing claim 4, Examiner Heneghan stated "the Requester [Frame Media] does not suggest that Muoio or Bitetto disclose the obtaining of an operating system update from the server" and "the Requester's proposed rejection is NOT adopted, because neither Bandaru nor Tomat teaches to a frame device obtaining an update to operating system software, as per the amended claim." With respect to new claim 20, which was dependent on new independent claim 18, Examiner Heneghan stated:

> The following is a statement of reasons for the indication of allowable subject matter: None of the references cited regarding base claim 18 disclose the obtaining of an operating system update via a network. These references therefore do not, when viewed in combination, render the claim obvious.

168. Both Frame Media and Ceiva appealed Examiner Heneghan's findings to the Patent Trial and Appeals Board ("Board"). Frame Media appealed Examiner Heneghan's allowance of claims 4 and 20, and Ceiva appealed Examiner Heneghan's rejection of the other claims.

169. On January 4, 2013, the Board issued an order in which the Board affirmed Examiner Heneghan's rejections of claims 1-3 and 7, but using a new ground of rejection.

170. In response to the Board's order containing new grounds of rejection of claims 1-3 and 7, Ceiva requested re-opening of prosecution and presented new claim amendments on January 31, 2013.

171. On July 3, 2013, Examiner Heneghan issued his final determination in which he found amended claims 2-5 and new amended claims 19 and 20 allowable. Examiner Heneghan stated:

> Regarding claim 2 as amended, neither Muoio nor Bitetto disclose or suggest the authentication of a server by a frame device.
>
> Claim 3 is dependent upon and incorporated all of the limitations of base claim 2 and is likewise not obvious.
>
> Regarding as amended claim 5, Muoio and Bitetto do not disclose the updating of software.
>
> Regarding claim 2, Bandaru does not disclose any authentication of servers. It therefore does not establish obviousness.
>
> Claim 3 is dependent on claim 2 and incorporates all of its limitations and is also not obvious.
>
> Regarding claim 5, the Requester's proposed rejection is NOT adopted because none of Bandaru, Tomat and Muoio discloses the inclusion of a software update as part of a package being transmitted. It is important to note that, in view of the specification of the '573 Patent, the term "software" is being construed as being limited to functional descriptive material.

The rejections of claim 19 over Muoio in view of Bitteto and Bandaru in view of Tomat are withdrawn in view of the Patent Owner's amendment to that claim. None of the art cited discloses an authentication of a server.

172. The Board affirmed Examiner Heneghan's determinations on December 12, 2013.

173. The reexamination certificate for the '573 Patent with the allowed amended claims issued on April 18, 2014.

4. The '930 Patent

174. The application which matured into the '930 Patent was filed on June 24, 2002, after the notice of allowance for the '573 Patent was mailed on March 22, 2002, but before the '573 Patent issued on August 22, 2002. It was filed as a continuation of the '573 Patent and claimed priority to the Original Application, thus having an effective filing date of December 10, 1999, the filing date of the Original Application.

175. The patent application for the '930 Patent was a copy of the Original Application, and included the same 43 claims of the Original Application. Via a preliminary amendment filed concurrently with the patent application, the applicants canceled those 43 claims and replaced them with 29 new claims, numbered 44-72, of which claims 44-55 were method claims, 56-61 were system claims, and 62-72 were computer program product claims. On February 27, 2006, applicants added another 11 claims, numbered 73-83, of which 73 to 82 were method claims and 83 a system claim.

176. On November 13, 2006 applicants canceled then pending claims 44-83 and added 21 new claims numbered 84-104, of which claims 84-95 were apparatus claims directed to a "digital frame device" and claims 96-104 were method claims. Relevant to this litigation are independent claim 85 and its dependent claims 86-95. Independent claim 85 recited:

85. (NEW) A digital frame device having an integrated structure comprising:

a display having a border region modeled to resemble an ornamental frame designed to circumscribe a printed work;

a memory;

a processor configured to implement a frame behavior in accordance with a plurality of frame behavior parameters; and

a communication interface configured to engage a network medium;

wherein said plurality of frame behavior parameters comprise an image display timing parameter and a connection timing parameter, and wherein said frame behavior comprises:

an image display function configured to obtain image data from said memory for rendering in said display based on said display timing parameter; and

a remote connection function configured to automatically engage a remote data repository across said network medium based on said connection timing parameter, said remote connection function further configured to obtain from said remote data repository one or more image data files and one or more preference values for said plurality of frame behavior parameters to store in said memory.

177. On February 8, 2007, the examiner, Cao H. Nguyen, issued a non-final office action rejecting Claims 84 and 96-104, but allowing Claims 85-95. Examiner Nguyen, in addition to being the examiner on the application for the ’930 Patent, was also the examiner for the succeeding application for the ’656 and ’562 Patents. Examiner Nguyen is also listed as the examiner on the Bandaru patent that Amazon is relying upon in its invalidity contentions.

178. In the February 8, 2007, office action, Examiner Nguyen gave the following reasons for allowing claims 85-95:

> The following is an examiner’s statement of reasons for allowance: Applicant has claimed uniquely distinct features in the instant invention which are not found in the prior art either singularly or in combination wherein said plurality of frame behavior parameters comprise an image display timing parameter and a connection timing parameter, and wherein said frame behavior comprises an image display

> function configured to obtain image data from said memory for rendering in said display based on said display timing parameter; and a remote connection function configured to automatically engage a remote data repository across said network medium based on said connection timing parameter, said remote connection function further configured to obtain from said remote data repository one or more image data files and one or more preference values for said plurality of frame behavior parameters to store in said memory. These features are not found or suggested in the prior art.

179. I have reviewed the file history for the Bandaru patent and note that Examiner Nguyen had six-months earlier, on August 11, 2006, issued a notice of allowance for the Bandaru patent. Examiner Nguyen was thus aware of the Bandaru patent when he stated that the claimed features of claims 85-95 were "not found or suggested in the prior art."

180. After applicants made minor amendments to claims 85-95 in response to Examiner Nguyen finding claims 85-95 allowable (e.g., amending the recitation of the term "frame behavior parameters" in the claims to instead recite "behavior parameters") and canceled claims 84 and 96-104, Examiner Nguyen issued a notice of allowance on December 10, 2007. Applicants paid the issue fee on March 4, 2008.

181. After payment of the issue fee, on April 9, 2008, the applicants filed a petition to withdraw the allowed application from issue to amend the application to add the priority claim to the Original Application into the specification. Although the priority claim had been included in the transmittal letter for the '930 Patent, and in the published patent application, it had been inadvertently omitted from the originally filed specification, which had been a copy of the Original Application, and which therefore did not include the priority claim in the specification itself. The petition was granted, a new notice of allowance was issued on May 8, 2008, and the issue fee was paid on June 13, 2008.

182. On October 10, 2008, after the issue fee was paid, but before the '930 Patent issued, as discussed above, Frame Media filed its initial request for reexamination of the '573 Patent,

citing the above referred to 38 prior art references. On October 21, 2008, the applicants filed another request to withdraw the ’930 Patent from issuance, this time to be able to disclose the references cited in Frame Media’s reexamination request to Examiner Nguyen for consideration during examination of the ’930 Patent application.

183. Prosecution of the application continued over the next several years, with Examiner Nguyen issuing office actions based on Muoio and Bandaru, among other prior art references, and applicants responding with arguments and claim amendments.

184. In an office action issued on March 10, 2011, Examiner Nguyen withdrew his previous claim rejections based on Muoio and Bandaru, implicitly conceding that applicants’ claim amendments overcame his previous rejections based on Muoio and Bandaru. Instead, Examiner Nguyen made new rejections based on other prior art references. Examiner Nguyen also made a provisional obvious-type double patenting rejection over then pending claim 31 of the application for the ’656 Patent, which had been filed on October 29, 2007, and which was also being examined by Examiner Nguyen.

185. On July 7, 2011, applicants filed a terminal disclaimer disclaiming any term that would extend past the term of the ’656 Patent to overcome Examiner Nguyen’s double patenting rejection, and continued prosecuting the ’930 Patent application.

186. On January 28, 2014, applicants filed an amendment adding the limitations of “authentication information for a remote server system” and of “an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system.”

187. After the reexamination certificate for the ’573 Patent issued on April 18, 2014, on October 21, 2014, applicants notified Examiner Nguyen of the outcome of the ’573 Patent

reexamination, namely that the Board had confirmed Examiner Heneghan's finding that the prior art did not disclose authentication of a server system, which was recited in the claims allowed in the reexamination.

188. In an office action dated March 9, 2015, Examiner Nguyen conceded that the prior art cited in his previous rejection of the claims did not include the authentication feature of the amended claims, stating "Bowden III, Shiimori and Rowley fail to explicitly teach authentication information for a remote server system." Examiner Nguyen, however, cited a new reference, Guheen (U.S. Patent No. 6,721,713). The Examiner stated: "Guheen discloses authentication information for a first remote server system (see col. 9, lines 5-65, col. 14, lines 21-53 and figure 1)."

189. Applicants responded to the Examiner Nguyen's March 9, 2015 office action on May 6, 2015. In the response, applicants noted that there was no mention in the portions of Guheen cited by the Examiner of any authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system. Applicants noted that that portion of Guheen referred to a "Secure Browser <u>Communications</u>" feature that implemented the secure <u>communications</u> provisions of conventional SSL used for encrypting web browser communications (citing Guheen at col. 14, lines 21-53). Applicants noted that SSL's feature of <u>providing secure communications</u> to "prevent eavesdropping, tampering, or message forgery" did not comprise the claimed authentication function that <u>authenticated</u> the server system. While at the time SSL also provided processes for authenticating clients and servers, that portion of SSL was not disclosed in Guheen.

190. In a telephone interview with applicants' attorney on July 21, 2015, Examiner Nguyen proposed an amendment that he said would render the claims allowable. The amendment

he required to make the claims allowable was adding the limitation "a software update function configured to obtain an updated version of said onboard software from the server and to replace said current version of said onboard software in said memory with said updated version" to pending independent claim 105, so that after the amendment both independent claims included both the authentication function and the software update functions. Although Examiner Nguyen did not expressly include reasons for allowance in the Notice of Allowance he issued shortly after the interview, on August 6, 2015, it was only after adding both the software update and authentication limitations to the claims that Examiner Nguyen found the claims allowable.

191. Applicants paid the issue fee, and the '930 Patent issued on December 1, 2015, after an examination process that lasted over 13 years. The patent office determined that the '930 Patent was entitled to a patent term adjustment of 1529 days, subject to its terminal disclaimer with respect to the '656 Patent, which had issued three months earlier.

5. The '656 Patent

192. The application that matured into the '656 Patent was filed on October 29, 2007, as a continuation of the application for the '930 Patent with 20 method claims directed at a method for distributing images among members of an online picture exchange community. Examiner Nguyen, who was also the patent examiner for the application for the '930 Patent, was assigned as the examiner for the patent application for the '656 Patent as well.

193. On July 9, 2008, applicants filed a preliminary amendment canceling the original method claims 1-20 and replacing them with 20 new claims 21-40, of which claims 21-30 were method claims and 31-40 were apparatus claims. Claims 31-40, of which claim 31 is an independent claim, are relevant to the current litigation. Claim 31 as filed stated:

> 31. (New) A display device for displaying image data received from an image data repository comprising:

a central processing unit;

a display screen for displaying said image data;

a communications interface configured to communicate via a communications network;

a memory comprising authorization information and computer readable instructions for controlling the operation of said display device, said computer readable instructions comprising instructions for causing said display device to perform the steps of:

sending a request for image data to said image data repository via said communications network, said request for image data comprising said authorization information;

receiving image data from said image data repository in response to said request;

storing said received image data in said memory;

displaying said image data on said display screen.

194. On May 18, 2010, Examiner Nguyen issued an office action rejecting claims 31-40, asserting that they were anticipated by a second Bandaru patent (U.S. Patent No. 6,535,228) ("Bandaru II"), which like the Bandaru patent cited during the prosecution of the '573 and '930 Patents, had also been examined by Examiner Nguyen.

195. Applicants filed a response on August 12, 2010, in which they pointed out that sections of Bandaru II relied upon by Examiner Nguyen were new material first added when the continuation-in-part application for Bandaru was filed on July 21, 2000, which was after the priority date of December 10, 1999 for the application for the '656 Patent. Applicants pointed out that therefore new material added to Bandaru II and relied upon by Examiner Nguyen was not prior art for the '656 Patent application.

196. Examiner Nguyen issued a subsequent office action on October 26, 2010. In this office action, he no longer cited Bandaru II, but instead rejected claims 31-40 over Muoio.

197. On December 12, 2011, applicants canceled method claims 21-30 and amended independent apparatus claim 31 to add the feature that the software in the memory of the claimed display device ("computer readable instructions") included instructions for receiving updated software over the network and automatically updating the existing software with the updated software. Applicants pointed out to Examiner Nguyen that Muoio did not disclose receiving updated software over the network nor automatically updating existing software with any received updated software.

198. On August 9, 2013, Examiner Nguyen issued a new office action in which he conceded that Muoio did not disclose the automatic updating of software with software received over a network, stating:

> Muoio fails to explicitly teach receiving updated computer readable instructions via said communications network; automatically updating said computer readable instructions with said updated computer readable instructions.

199. Examiner Nguyen made a new rejection, however, based on a combination of Muoio with Bandaru II. Examiner Nguyen asserted that Bandaru II disclosed receiving updated software over a network and replacing current software with updated software, and that it would be obvious to combine Muoio with Bandaru II, stating:

> One would have been obvious to make such a combination in order to allow user to browse through the digital photographing images on the Internet in order to support these diverse functionalities; however, the use of online picture exchange systems is well-known in the art, because they allow separate computer systems to update software application and it would be obvious for one of ordinary skill in the art to implement the Art Administration Interface using a network, in order to allow the systems to update software application

200. On December 6, 2013, applicants amended independent claim 31 to clarify that the claimed computer readable instructions were instructions for controlling the operation of the claimed display device. Applicants pointed out what Examiner Nguyen had cited as updated

computer readable instructions disclosed by Bandaru II was only configuration data, not software for controlling the operation of a display device.

201. Examiner Nguyen continued to maintain his rejections based on the combination of Muoio and Bandaru II, and in an office action dated March 20, 2014, stated:

> On pages 7-9 of the remark; Applicant argues that Muoio and Bandaru do not teach or suggest "computer readable instructions for controlling the operation of said display device.. because they are non-executable data.."; Examiner respectfully disagrees. As shown in figure 6, Muoio reads on "..The art distribution system may be implemented in software and may execute on a computer system with a control processing unit, memory, and input/output devices. The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as the Internet. The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., the Internet) to an art mass storage device. The art mass storage device includes images and image information for accessible images; (see col. 6, lines 6-30).
>
> On pages 7-9 of the remark; Applicant argues that Muoio and Bandaru does not teach or suggest "..a memory comprising authorization information and computer readable instructions for controlling the operation of said display device, said computer readable instructions comprising instructions for causing said display device to perform the steps of: sending a request for image data to said image data repository via said communications network, said request for image data comprising said authorization information.." Examiner respectfully disagrees. As shown in figures 7 and 9, Muoio reads the art distribution system then displays the selected image within the space including within all subspaces of the selected space. The art distribution system may allow a subsequent assignment of the image to a subspace to override within that subspace the previous selection of an image for the space. The image to be displayed may be part of a play list of images. The art distribution system also provides for the downloading of images in a background mode from a remote image storage device. The art distribution system provides an image administration module that allows a user to identify images that are to be included in a play list. The image administration module then sends the identity of those images to an art server. Upon receiving the identity of those images, the art server determines whether the bitmaps for those images have already been stored at the art server. The art distribution system also allows a user to specify that image information for accessible images that match specified criteria should be downloaded when those images become accessible. The art distribution system periodically transmits the criteria to image storage devices. The image storage

devices identify those images that satisfy the criteria and then provides those identifications to the art distribution system. The art distribution system stores information describing those images so that a user can subsequently select those images to be included in a play list; as recited in Muoio.

202. Applicants continued to further amend the claims to further distinguish the claimed invention from the prior art (such as by including "authentication information" and "automatically initiate a communication session" in the claims) and continued to point out deficiencies in Examiner Nguyen's rejections.

203. Finally, in a telephone interview on May 5, 2015, Examiner Nguyen stated that he would allow the claims if the limitation of then-pending dependent claims 40 and 51 were added to pending independent claims 31 and 41, namely a limitation that the computer readable instructions in the memory of the claimed display device includes "instructions for causing said display device to instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device."

204. After conducting a further prior art search to confirm that the added limitation, in combination with the other claim elements, was not disclosed in any prior art, Examiner Nguyen added the limitation to independent claims 31 and 41 via an Examiner's amendment and issued a notice of allowance on June 3, 2015. After payment of the issue fee, the '656 Patent issued on September 1, 2015. The patent office determined that due to delays by the patent office, the '656 Patent was entitled to a patent term adjustment of 1329 days.

6. The '562 Patent

205. The application that matured into the '562 Patent was filed on July 17, 2015, as a continuation of the '656 Patent after Examiner Nguyen had issued his notice of allowance of the '656 Patent on June 5, 2015. It, like the other Patents-in-Suit, claimed priority back to the Original Application via the '656, '930 and '573 Patents.

206. The application as filed included one independent claim and 19 dependent claims. Independent claim 1 as filed read:

> 1. An apparatus for displaying content received from a server system via a communications network on a display screen comprising:
>
> a central processing unit;
>
> a video controller configured to control display of said content on said display screen;
>
> a communications interface configured to communicate with said server system via said communications network;
>
> a memory comprising a unique identifier for said apparatus, computer readable instructions for controlling the operation of said apparatus, and a version identifier for said computer readable instructions, said computer readable instructions comprising instructions for causing said apparatus to perform the steps of:
>
> upon connection to a power source and a communications source, initiating a communications session with said server system via said communications network;
>
> sending said unique identifier to said server system;
>
> sending said version identifier to said server system;
>
> prompting a user of said apparatus to create an account at said server system;
>
> receiving updated computer readable instructions for controlling the operation of said apparatus from said server system;
>
> updating said computer readable instructions in said memory with said updated computer readable instructions;
>
> receiving content from said server system;
>
> displaying said content on said display screen.

207. On June 15, 2016, Examiner Nguyen, who had again been assigned as the examiner, issued a non-final office action rejecting Claims 1-20 for double patenting over the ’656 Patent and as being unpatentable over Muoio in combination with Bandaru II.

208. In response, applicants filed a terminal disclaimer with respect to the ’656 Patent and amended independent claim 1 to further distinguish the claimed apparatus from Muoio and Bandaru II. Independent claim 1 as amended read:

> 1. (Currently amended) An apparatus for displaying content comprising image data received from a server system via a communications network on a display screen comprising:
>
> said display screen;
>
> a central processing unit;
>
> a video controller configured to control display of said content on said display screen;
>
> a communications interface configured to communicate with said server system via said communications network;
>
> a memory comprising a unique identifier for said apparatus, computer readable instructions different from said content for controlling the operation of said apparatus, and a version identifier for said computer readable instructions, said computer readable instructions comprising instructions for causing said apparatus to perform the steps of:
>
> upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network;
>
> sending by said apparatus said unique identifier to said server system;
>
> sending by said apparatus said version identifier to said server system;
>
> prompting by said apparatus a user of said apparatus to create an account at said server system;

receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system;

updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions;

receiving by said apparatus updated content from said server system;

displaying by said apparatus said updated content on said display screen.

209. Applicants pointed out that claim 1, as amended, included at least six limitations not found in Muoio or the portion of Bandaru II that qualified as prior art. Applicants stated:

In sum, as shown above, neither Muoio nor the portion of Bandaru that qualifies as prior art to the present application disclose at least the following six (6) limitations of independent claim 1, as amended:

1. A display apparatus comprising memory comprising a unique identifier for the display apparatus.

2. A display apparatus comprising memory comprising a version identifier for computer readable instructions stored in such memory.

3. A display apparatus comprising memory comprising computer readable instructions for causing a display apparatus to initiate a communication with a server upon connecting to a power source and communications source.

4. A display apparatus comprising memory comprising computer readable instructions for causing a display apparatus to prompt a user of said apparatus to create an account at said server system.

5. A display apparatus comprising memory comprising computer readable instructions for receiving updated computer readable instructions for controlling the operation of said apparatus from a server.

6. A display apparatus comprising memory comprising computer readable instructions for updating by said apparatus the computer readable instructions in its memory with updated computer readable instructions received from a server.

> Because neither Muoio nor the prior art portion of Bandaru discloses the above six (6) limitations of independent claim 1, as amended, any combination of Muoio with Bandaru necessarily lacks those six (6) claim limitations as well.

210. Examiner Nguyen accepted applicants' arguments and issued a notice of allowance on January 9, 2017. After payment of the issue fees, the '562 Patent issued on May 16, 2017.

VII. SUMMARY OF OPINIONS & CONCLUSIONS

211. Based on my review of the Patents-in-Suit and as further discussed below, I have reached the following opinions regarding the Patents-in-Suit. Throughout my analysis, I offer specific opinions on many issues, so I provide this summary to help orient the reader with a condensed and manageable overview of my opinions.

212. As I discuss in Section IX, the Asserted Claims of the '573, '562, and '930 Patents are entitled to a priority date of at least September 16, 1999. As described by the inventors and corroborated by contemporaneous documentation, the inventors clearly conceived of each claimed element by at least that date; they firmly understood what the systems would require and how they would operate; and they worked with reasonably continuous diligence to reduce their invention to practice through December 10, 1999, when they filed the 09/458,849 Application, thereby constructively reducing their claimed inventions to practice. This priority date is significant because it antedates one of the main obviousness references relied upon by Amazon and Dr. Johnson—a patent application by Bandaru filed on September 23, 1999—such that the Bandaru application actually is not actually "prior" art for the Asserted Claims of the '573, '562, and '930 Patents. The character and weight of the evidence, including the development records and timing to market of the Ceiva Frame, show that the inventors firmly conceived of their inventions before the Bandaru patent application was filed and actively worked to develop a commercial embodiment of their invention that reached the market as a first-in-class product—

with Amazon as the exclusive retailer—in less than a year, which is a remarkable accomplishment. Under the "first to invent" patent system in place in the United States until 2013, the inventors of the '573, '562, and '930 Patents are entitled to priority over Bandaru.

213. As I discuss in Section VIII, the Patents-in-Suit are directed to patent-eligible subject matter under §101 of the Patent Act. The patents identify multiple technological problems with prior art digital display devices and networking solutions and claim new and improved systems with specific requirements to overcome those technical problems. The patents do so by unconventionally coupling a digital frame device with a remote user interface, server system, and novel configurations, enabling a user to control the images displayed on the frame device and its behavior characteristics via a remote user interface, with the frame device automatically and securely updating its images, operating software, and behavior instructions on a regular schedule, thereby improving the functioning of the digital display device. The claims themselves recite new and non-obvious arrangements of components, features, and functions that were exemplified by the Ceiva Frame—a product hailed with industry praise—indicating something substantially more than what was already well-known, routine, and conventional. The claims are not directed to a mere abstract idea—such as a fundamental economic practice or a law of nature—but to physical systems featuring unconventional technical improvements over (i) prior art digital display devices, which were not self-configuring and could not be remotely controlled or updated; and (ii) prior art networking systems—such as email, web browsers, and push systems—which were not conventionally used for (or capable of) selectively distributing and displaying digital images according to user preferences. The Asserted Claims pass the *Alice* test for patent eligibility because they are directed to new and improved systems designed to improve the way the digital display device obtains and displays images. The Asserted Claims are directed to an unconventional system

architecture featuring a remote user interface and cloud storage that improved the functioning of the display device itself, enabling it to do things it could not do before, such as automatically updating its own images, settings, and operating software, thereby eliminating many of the complications inherent in the prior art.

214. As I discuss in Section XI, the Asserted Claims of the Patents-in-Suit satisfy the §112 enablement, written description, and definiteness requirements of the Patent Act with readily-comprehensible claim language supported by a detailed written description with numerous illustrative examples and figures, enabling a POSITA to understand, make, and use the claimed inventions without undue experimentation considering (1) the breadth of the claims; (2) the nature of the invention; (3) the state of the prior art; (4) the level of one of ordinary skill; (5) the level of predictability in the art; (6) the amount of direction provided by the inventor; (7) the existence of working examples; and (8) the quantity of experimentation needed to make or use the invention based on the content of the disclosure. The inventors particularly pointed out and distinctly claimed the subject matter of their invention, showing possession of the claimed inventions and informing, with reasonable certainty, those skilled in the art about the scope of the inventions. Although Amazon and Dr. Johnson contend that nearly every element of the claimed inventions is unsupported, I disagree because the inventors provided a robust disclosure.

215. As I discuss in Sections X, XII, and XIII, the Asserted Claims of the Patents-in-Suit satisfy the §103 non-obviousness requirement of the Patent Act with a combination of elements that is not taught or suggested by the prior art. The Patent Office examined the Asserted Claims carefully over a period of years and found that they were allowable over the primary prior art patents relied upon by Amazon and Dr. Johnson. Dr. Johnson's arguments for obviousness are based on hindsight reasoning, unsupported combinations lacking any proper motivation to

combine diverse references from different fields of endeavor, and improper assumptions and conclusions about what the prior art discloses. The objective evidence demonstrates that the claimed inventions were nonobvious with substantial industry praise (including from Amazon), commercial success, and copying by others, among other secondary indicia.

216. As I discuss in section XIV, the Asserted Claims of the ’930 Patent and ’655 Patent were not obvious for double patenting over Claim 18 of the ’573 Patent or Claim 17 of the ’562 Patent. The Asserted Claims of the ’930 Patent and ’656 Patent include distinct elements, such as software update and authentication requirements, with no obvious corresponding element in Claim 18 of the ’573 Patent or Claim 17 of the ’562 Patent. The “missing” elements are not merely minor changes or design choices but instead are substantial elements narrowing the claim scope in a patentably distinct way. To fill in the missing elements, Amazon and Dr. Johnson improperly resort to combining Claim 18 of the ’573 Patent and Claim 17 of the ’562 Patent with specification passages describing elements that were not claimed in the ’573 Patent or ’562 Patent and with prior art references from different fields of endeavor, with no reasonable or compelling motivation to combine them and supply the missing elements. In such analysis, the specification should be used only to understand the scope of the claims, and earlier patents should be used only for considerations related to obviousness, for example, to show that a claimed element represents a minor change or an obvious design choice. A properly conducted analysis confirms the Asserted Claims of the ’930 and ’656 Patents disclose inventions that are patentably distinct and non-obvious over Claim 18 of the ’573 Patent or Claim 17 of the ’562 Patent.

VIII. THE ASSERTED CLAIMS ARE PATENT-ELIGIBLE

217. In my opinion, each asserted claim is directed to eligible subject matter under 35 U.S.C. § 101. Dr. Johnson’s conclusory, high-level generalizations do not show by clear and convincing evidence that the claims are patent-ineligible. The claims of each patent are directed to

a first-in-class improved digital picture frame system with an unconventional distributed network architecture that included a digital display device, a remote user interface, and a server system, which solved many technological problems of the time with traditional or digital picture frames, not an abstract concept or result independent of the claimed picture frame. For example, the claims are not directed to business methods, mathematical concepts, methods of organizing human activity, or mental processes—but rather an innovative consumer electronics device and system. The shared patent specification also draws multiple distinctions between the claimed invention and the prior art. The claimed functions and features of the improved digital picture frame were non-generic arrangements and were non-conventional at the time of the invention.

218. The ’930, ’656, and ’562 Patents were all issued by the Patent Office after the Supreme Court’s opinion in *Alice*. During that time period, rejections of patent applications based on 35 U.S.C. § 101 increased and patent issue rates in the studied art units significantly decreased.[38] The USPTO Chief Economist issued a report in 2020, indicating that § 101 rejection rates increased by 31% in the 18 months following the *Alice* decision.[39] However, none of the Patent-in-Suit received § 101 rejections during prosecution despite the increasing focus on subject matter eligibility during that time.

219. I have reviewed the Court’s order denying Amazon’s motion to dismiss Ceiva’s First Amended Complaint from the *Ceiva I* litigation (Dkt. 48) as it relates to this issue, and the briefing by the parties related to that motion (Dkts. 35 and 38).

[38] https://www.jdsupra.com/legalnews/impact-of-the-uspto-examination-32092/

[39] https://www.uspto.gov/sites/default/files/documents/OCE-DH_AdjustingtoAlice.pdf

A. Alice Step 1

220. In my opinion, each asserted claim is directed to eligible subject matter under step 1 of the *Alice* test, and Dr. Johnson has not shown that any asserted claim is directed to an abstract idea. The claims of each patent are directed to novel and unconventional improvements on existing technologies and solving technological shortcomings of products of the time with specific improvements within the claimed devices and systems. As described below, the unconventional system architecture and technical configurations in the claimed inventions improved how digital display devices obtain, store, and use images, preferences, settings, and software, improving the functionality of the display device itself. This enabled a frame device to do things it could not do before, such as updating its own images, settings, and software on a regular schedule, thereby eliminating problems inherent in the prior art.

221. The specification identifies multiple deficiencies with prior art solutions and technologies that were solved by the patented inventions. For example, the Sony PHD A55 CyberFrame ("CyberFrame") required a user to physically provide storage media such as a Memory Stick to the device. *See* '573 Patent at 1:56-58, 2:15-17. Therefore, someone without physical access to the device could not add or change images on the device. *See* '573 Patent at 2:17-19. The device also could not be controlled from a remote location, such as changing device behavior using a remote website. *See* '573 Patent at 2:19-22. Prior art devices like the CyberFrame also could not have functions, features or software updated or modified remotely such as over a network from an authorized user, nor could they communicate with other devices over a telecommunication medium or network. *See* '573 Patent at 1:49-53, 2:23-31. They also supported only limited image file formats and resolutions. *See* '573 Patent at 1:59-67. And they could not elect to receive periodic information relating to a particular topic, such as weather information. *See* '573 Patent at 2:37-39.

222. Prior art computer networks that included techniques for transmitting data to a client computer, such as electronic mail, client pull, and server push techniques, lacked the ability to establish and then control device behavior from a remote location. *See* '573 Patent at 2:47-61. For example, email systems required a separate computer and specialized knowledge by the user on how to use both the computer and the email system. *See* '573 Patent at 3:24-43. These prior art systems were complex and required the user to complete a number of manual operations for connection, download and viewing of images via email. *See* '573 Patent at 3:44-53. In addition, such systems were unable to view certain image file types without additional applications and/or user intervention. *See* '573 Patent at 3:54-4:1. Email systems also were dependent on third parties sending images, and were not configured to periodically request, obtain and display images. *See* '573 Patent at 4:2-12.

223. As another example, prior art webpages viewed through web browsers (identified in the specification as an example of "client pull" technology) involve the end user device requesting data from a server, which transmits the data (such as a webpage) for viewing by the user device. *See* '573 Patent at 4:14-44. As identified in the specification, in such systems each individual server request is treated individually, and the web server does not maintain information about prior requests. *See* '573 Patent at 4:45-61. Display for such web server-based prior art systems were accomplished by web browsers, which display files such as web pages or PDF image files on a computer. *See* '573 Patent at 4:62-5:10. Problems with these prior art systems include that information to be downloaded must be included in the request, such as a URL, such that the web server is not configured to know what is needed by the client device outside of what is requested. As such, this type of system would not know whether the client required a software update. *See* '573 Patent at 5:11-23. Another problem is that such systems could not ensure that

data intended for a specific device is only sent to that device (such as based on a unique serial number). *See* '573 Patent at 5:24-30. The request from the user device such as the URL requires user input to initiate, and the user device is unable to be controlled or have settings modified from a remote computer. *See* '573 Patent at 5:30-35.

224. The specification also describes the technological deficiencies of "server push" techniques, which transmit predetermined data sets from a server computer to client computers. *See* '573 Patent at 5:36-6:13. Problems identified with these systems in the specification include that data in such systems only flows in one direction, from the server to the client device, and that there is no way to ensure that data intended solely for a specific device or user is sent only to that particular recipient. *See* '573 Patent at 6:14-24.

225. The shared specification identifies specific, actual technical solutions of the patented inventions. One stated improvement of the claimed inventions was the ability for the user to have full frame functionality, including photo replacement, software, and preferences updates, without use of a separate computer to transfer such data. In effect, the claimed inventions added to a digital frame device only those hardware and software elements necessary to replace functions otherwise provided by a transferring computer, without the expense or complexity of other computer elements not related to the improved product. This allowed the patented device or system to be utilized by individuals who either did not own separate computers or did not have the physical ability or technical know-how to accomplish the technical tasks necessary to download, transfer and view image data, import settings, and update device software. *See* '573 Patent at 1:56-58, 2:17-22, 2:33-39, and 2:41-4:6.

226. In addition, the shared specification identifies that the claimed inventions allowed the device—unlike prior photo frame devices—to obtain both image data and preferences for the

device from networked sources, such that device images and display characteristics can be controlled by the network server or by authorized users using other networked computer interfaces or applications. *See* '573 Patent at Abstract, 7:12-22, 8:61-9:29, 13:65-16:25, 21:62-22:9. Because image processing is completed by the networked server, rather than the photo frame, to ensure that images to be viewed are of the correct size and type for viewing on the photo frame, and only come from authorized sources, the photo frame could be cheaper and less complex, with fewer applications and less hardware requirements. *See* '573 Patent at 9:9-26, 11:17-24, 13:65-14:27, 14:63-15:6, 26:42-28:24. This is an important factor for consumer electronics. Allowing networked storage of images also decreased processing and storage needs on the photo frame devices, again decreasing complexity and cost. *See* '573 Patent at 11:17-24; 22:10-27, 23:42-55, 26:42-27:24. This feature also allows for remote parental controls over the photo frame, such that parents could control image selection and display parameters without needing direct access to the device. *See* '573 Patent at 16:2-25.

227. The specification also instructs that the operating software of the patented inventions could be directly updated to correct problems or add new functionality, without requiring the use of a separate computer or the specialized knowledge required by a user to download, transfer and install such update software using transferrable memory such as a USB stick or a direct connection between the digital picture frame to a separate computer such as a USB cord. *See* '573 Patent at 2:23-32, 9:23-29, 10:3-20, 11:50-63, 14:27-15:6, 15:27-40, 20:62-21:12, 25:16-26, 29:43-57. For example, the specification contemplates that user interface decisions such as the functions of buttons or inputs, could be updated through this process, and lost data can be recovered without user input. *See* '573 Patent at 10:3-20.

228. The specification further identifies that the patented inventions securely authenticated both the frame device to the networked server and the networked server to the frame device through claimed security protocols to ensure that data and communications are being sent and received from authorized devices (server and frame) over the network, and only the specific devices for which the data was meant to be received. *See* ’573 Patent at 9:26-29, 14:63-15:6, 15:58-16:25, 16:51-17:8, 18:16-26, 19:44-20:21, 21:38-22:9, 23:37-41, 24:41-48, 27:40-65, 28:3-29:59, Appendix A, Figure 10. This robust security protocol allowed sensitive data such as individuals’ images to be transmitted over a network securely and only to the specific digital frame devices to which they were directed. *See* ’573 Patent at 9:26-29, 14:63-15:6, 15:58-16:25, 16:51-17:8, 18:16-26, 19:44-20:21, 21:38-22:9, 23:37-41, 24:41-48, 27:40-65, 28:3-29:59, Appendix A. It also prevents unauthorized users from changing settings in the photo frame devices or causing other mischief. *See* ’573 Patent at 15:58-16:25, 16:51-17:8, 19:44-20:21, 21:38-22:9, 23:37-41, 27:40-65, 28:3-29:59.

229. The specification also discusses the use of different accounts for the end user and for remote management. One of the technological improvements in the claimed devices and systems is the ability to securely control image display, preferences and software updates on the frame devices through the remote server system, including secure remote access by other authorized users through separate remote computers connected to the remote server system. *See* ’573 Patent at 7:7-49, 8:61-9:1, 10:9-20, 13:65-16:25, 21:38-22:27, 26:18-28:29. The specification discloses the use of a data repository comprising one or more databases that, among other things, include a user database that includes information about registered users in the system. *See* ’573 Patent at 19:5-62. The data repository also holds information about each frame device initialized with the system, such as the frame device’s unique identifier, location information,

access number, timing intervals for predetermined actions, display preferences, software versions, connection history, administration information, and/or content provider information. *See* '573 Patent at 13:65-14:36, 19:63-21:34. The specification discloses filters or limits on which individuals or accounts have the ability to remotely send images, data or settings to a photo frame device. *See* '573 Patent at 7:12-22, 14:5-36, 14:63-15:6, 27:25-53, 28:7-18. The specification discloses that a user can register or initialize an account with the data repository on the remote server system, including individuals who do not own such a photo frame device but wish to submit images to photo frames for which they are authorized to do so, such as by logging into a website and uploading photos. *See* '573 Patent at 16:2-5, 21:46-55. An exemplary table structure for storage of the various types of data used within the data repository is found in the specification at Appendix A. *See* '573 Patent at 19:5-21:34, 31:39-33:47.

230. The specification provides various ways by which a user can register or initialize an account for authorized access. One way is by directly initializing a frame device. *See* '573 Patent at 21:38-61. If the frame device is not already registered to the remote server system, an account initialization message such as a prompt to create an account associated with that device is displayed to the user on the device. *See* '573 Patent at 24:35-58. The creation of this secure account allows a user to control preferences and access to the frame device despite the device having access to a network.

231. The specification also discloses that the frame device, through registration or initialization, instructs the remote server to create an interface accessible by a web browser for managing images and behavior characteristics of the device. *See* '573 Patent at 7:23-37, 9:5-19, 14:18-15:33, 15:52-64, 21:38-43, 22:3-9, 22:28-44, Figure 5. This improvement over prior art image display devices allowed for secure, remote access to control the frame device with respect

to, e.g., images, settings, preferences and software, but only in frame devices for which a remote user is authorized to access.

232. Another technological improvement over prior art was the ability of the frame device to instruct the remote server system to associate a record with the device upon initial connection to the server system (e.g., by registering the device in a database). *See* '573 Patent at 17:9-40, 20:3-10, 21:64-67, 24:19-25:27, Figure 8. This allows the frame device to register with the remote server system without the end user needing to use a separate computer or web interface, reducing complexity and the requirement for technological know-how. The claimed record association (e.g., registration) process ensures that images and preferences sent to the device from the server system are directed to the correct device through the claimed secure communications protocol. *See* '573 Patent at 8:61-9:1, 13:65-36, 19:63-20:21, 21:64-67, 24:35-25:3, 27:25-65. Alternatively, the ability to allow a user to initialize or create an account using the display device for purposes of registration as described in the specification further eliminates the requirement for a separate computer and technical know-how. *See* '573 Patent at 24:45-58.

233. The patented frame device also introduced a technological improvement over prior art with the ability for the device to, upon connection to a power source and communications source and without any additional input from a user, initiate communication with the remote server system. *See* '573 Patent at 6:50-55, 8:45-52, 9:8-9, 9:30-10:7, 16:26-50, 24:28-38, 25:30-47. This technological innovation over prior art allowed for a simplified user interface while maintaining complex functionality, and removed a significant hurdle to networked device setup, which is the technical know-how necessary for initial product connection to a remote server system. Because of this improvement, technically novice consumers could connect the device to power (such as a power cord connected to a wall outlet) and a communications source (such as a telephone line or

Internet gateway connection), and the claimed device was designed to then initiate communications over the network without further input. *See* '573 Patent at 12:41-13:10, 13:52-64, 25:30-26:15, 26:31-41. Once this connection is made, the specification discusses a number of processes that can occur to provide useful data and functionality to the device for the benefit of the consumer. *See* '573 Patent at 18:24-56, 25:8-26, 28:13-29.

234. Another technological improvement in the patents that cured deficiencies in the prior art is the ability for the frame device to periodically reconnect to the remote server system to request such data as updates to images, preferences and software. *See* '573 Patent at 7:21-25, 11:36-47, 14:44-49, 20:30-40, 24:21-34, 28:13-23. There are several benefits of this improvement. First, it reduces memory space needs in the device (and therefore cost) due to utilizing cloud storage on the remote server system. *See* '573 Patent at 27:17-22, Dean Schiller Oct. 29, 2021 Depo. ("Schiller Depo.") at 72:23-73:3. Because the device periodically connects to change image data, it is able to display and rotate through a much greater number of images on the device over a period of time than a device that is limited to its internal or connected memory of the same size. This periodic reconnection also allows the device to fix problems such as software or data errors potentially before such issues became obvious to an end user. *See* '573 Patent at 10:3-7, 21:1-12. In addition, unlike prior art technologies like client pull, the patented device was not required to know and request the specific content it was to receive from the remote server system; instead, in the patented device and system, the device can request data from the remote server system without requesting specific files or data and the server system determines what is needed for transmission. *See* '573 Patent at 5:11-23, 8:1-52, 9:19-29, 11:50-60, 15:27-40, 25:8-26, 27:40-28:25, 29:41-49.

235. The patented invention further added an improvement over prior art in the ability for the device to receive location information from the remote server system. The specification

instructs that this location information can be used to instruct the device regarding settings such as the device time and time zone, when and how to connect to the server system in future connections, or when to automatically dim its screen, simplifying the device design by reducing or eliminating the need for user input regarding location information. *See* '573 Patent at 8:45-47, 9:32-10:7, 10:23-35, 20:11-29, 20:41-61. The frame database of the '573 Patent stored information regarding speed of connections and failed or successful connections. This information could aid in optimizing data transfer. *See* '573 Patent at 21:1-12.

236. Another technological improvement over the prior art was the ability for the image display device to transmit metadata to the server system. *See* '573 Patent at FIG. 10, 29:22-59. Examples of metadata disclosed in the specification include status information about the frame such as unique identifier, relative clock time, slide show information, image information, image display list, log information, error information, configuration information or connectivity information, or new or additional parameters and/or functionality that are to be added to the device such as through an on-board software update. *See* '573 Patent at 17:53-65, 18:23-34, 29:22-28 (I note that col. 29 lines 22-23 appear to contain a typographical error based on Figure 10, such that "the data server transmits metadata and/or a log file to the data, server" should be "the frame transmits metadata and/or a log file to the data server."). For example, the remote server system can use this metadata, e.g., to diagnose technical problems, identify current status and settings, and/or identify needed features or software updates. *See* '573 Patent at 23:42-55, 29:29-50. This overcomes issues with prior devices that did not allow for remote diagnostics or control. *See* '573 Patent at 1:50-53, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-30. The frame database of the '573 Patent stored information related to failed connections, speed of connections, and other information that could be used to optimize transmissions.

237. Another technological improvement in the patents that cured deficiencies in the prior art is the ability to store and update preference information such as for controlling the display, including image display lists. *See* '573 Patent at 8:50-52, 8:65-9:1, 10:44-48, 11:24-28, 11:36-63, 25:8-22, 28:13-29, 29:41-59. Unlike prior art, the patented image display device can obtain image data and preferences and then display that data according to those preferences, without user intervention. *See* '573 Patent at 3:40-44, 4:2-12, 8:35-41, 19:9-25, 25:10-15, 28:25-29. Examples of device preferences or behavior characteristics found in the specification and claims include user display criteria, image display lists, image format and size, screen dimming, communication timing information for specifying the timing of sending requests for image data to the server system, and display timing information for specifying the timing of displaying images on the display screen. *See* '573 Patent at 7:25-38, 8:35-41, 14:37-15:6, 20:31-61, 23:42-55, 26:66-27:24, 27:40-65. The specification and claims disclose that these preferences can be defined remotely, which allows image lists, display timing information, and other preferences to be set and updated by a remote server or by authorized users through the secure communications protocol. *See* '573 Patent at 7:25-38, 8:35-41, 14:37-15:6, 20:31-61, 23:42-55, 26:66-27:24, 27:40-65.

238. The specific technological improvements over prior art discussed above are found throughout the asserted patent claims. These improvements are not capable of being executed by a human mind and constitute elements of a tangible device.

239. Dr. Johnson asserts that "the patents describe a digital picture frame that connects to the Internet to receive images for display," and that the "asserted claims recite nothing more than a digital picture frame—well known in the art by the purported priority dates of the asserted patents—that is connected to the Internet and can be controlled and populated remotely through conventional servers and a generic user interface." Johnson ¶¶451-52; *see also* Johnson ¶449.

240. That level of over-generalization and dismissiveness could be applied to any number of famous inventions: the Wright brothers' airplane was just a flying vehicle; Edison's light bulb was just an electric candle; and Bell's telephone was just a telegraph for spoken words. All of those inventions incorporated known technologies and combined them in unconventional ways to create something that was new, different, and useful.

241. Dr. Johnson states that "**the claims** recite no specific solution for achieving this aspiration result or any improvement to computing technology." Johnson ¶452 (emphasis added); see also Johnson ¶456 (stating "**The claims** provide no information about how these functions should be achieved—no algorithm or special programming.") (emphasis added). Dr. Johnson's analysis focuses almost exclusively on claim language (although in doing so he oversimplifies and describes the claims in general terms such as "sending, transmitting, receiving, storing, and displaying data, authentication, and updating software," Johnson ¶452, rather than analyzing all elements of each claim) and fails to properly analyze the claims as a whole in light of the specification. Dr. Johnson's analysis ignores the large amount of support in the specification articulating specific, concrete technological problems and solutions corresponding to specific claim elements discussed below.

242. The Court previously found that the claims are directed to "a digital picture frame able to automatically access a remote data repository to obtain updated content without the use of a computer and without any further user input." But that characterization of the claims is incomplete because it disregards elements of the claims that the specification identifies as improvements over the prior art.

243. For example, claim 1 of the '573 Patent is a ***system*** claim requiring (1) a frame device configured to operate according to preferences defined by a user and to obtain updated

operating system software from a server system; (2) a user interface—separate from the frame device—connected to a server system via a network and configured to obtain image data and preferences from a user and relay the image data and preferences to the server system; and (3) a server system connected to the frame device via the network configured to periodically relay image data and preferences to the frame device in response to requests automatically issued by the frame device.

244. A proper characterization of what the claims as a whole are directed to must go beyond a "server system coupled to … digital picture frame … configured to periodically relay … image data … when … digital picture frame automatically issues a request for said image data." That is only part of what claim 1 requires. Notably, claim 1 of the '573 Patent also expressly requires: (1) the frame device "to operate according to preferences defined by a user;" (2) a "user interface … physically separable from said … digital picture frame" and "configured to obtain image data and said preferences from said user and provide said image data and said preferences to said … server system;" and (3) the frame device "to obtain an update for said operating system software from said … server system." Those additional limitations are called out in the specification as part of the invention specifically intended to overcome problems and disadvantages of the prior art.

245. As another example, Claim 2 of the '573 Patent recites "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system." (see also identical claim 6 element and similar claim 19 element) This claim limitation, as explained above, is a significant technological improvement over prior frame device systems because it allows a

user that is physically remote from the device to control images and preferences on the device. *See* '573 Patent at Abstract, 6:33-7:1, 7:7-49, 8:61-9:29, 10:9-20, 13:65-16:25, 20:41-61, 21:38-23:55, 24:49-25:27, 26:18-28:29. Because the image and preference processing is completed through a remote server system that uses authentication as described above and in later elements to this claim, the remote image sharing and preferences control can be executed securely and limited to authorized individuals. This also allows sharing of remote images without the frame device owner requiring use of a separate computer to download, format, and transfer images and preferences to the device, or the know-how required for such processes. *See* '573 Patent at 2:15-32, 5:20-35, 6:14-30, 6:33-50, 9:26-10:34, 14:63-15:6, 15:58-16:25, 16:51-17:8, 18:16-26, 19:44-20:21, 21:38-22:9, 23:37-41, 24:41-48, 27:40-65, 28:3-29:59.

246. Claim 2 of the '573 Patent recites "said at least one server system coupled to said at least one frame device via said network, wherein said at least one server system is configured to generate package data comprising said image data and said preferences and to periodically relay said package data comprising said image data and said preferences to said at least one frame device when and in response to said at least one frame device automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences."[40] These claim elements are technological improvements

[40] *See also* claim 6 element "said at least one server system coupled to said at least one frame device via said network, wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data" and claim 19 elements "said at least one server system coupled to said at least one digital picture frame via said network," and "wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one digital picture frame when said at least one digital picture frame automatically issues a request for said image data and wherein said at least one digital picture frame is configured to obtain an update for said operating system software from said at least one server system."

over the prior art frame devices that (a) did not connect with servers and (b) could not periodically update image data or preferences. The periodic relay of image data and preferences allows the benefit of cloud storage, including lessening device memory requirements in the frame device while periodically rotating through images in memory, and also allows preference data such as image lists or display instructions to be regularly updated. *See* '573 Patent at 2:37-39, 4:2-12, 7:21-25, 10:3-7, 11:36-47, 14:44-49, 20:30-40, 21:1-12, 24:21-34, 27:17-22, 28:13-23. This element also allows the remote control of image data and display preferences without needing direct contact with the device. *See* '573 Patent at Abstract, 1:47-58, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-53, 7:7-11, 7:30-37, 8:31-52, 9:8-10:20, 12:41-67, 13:40-14:62, 15:6-40, 16:26-50, 18:16-56, 19:13-25, 24:21-48, 25:16-26:15, 28:13-25, 30:44-31:14.

247. Claim 2 of the '573 Patent recites "wherein said at least one frame device is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in memory of said frame device." As discussed above, this claim element is a technological improvement over prior art and solved the potential problem of insecure data transfer involving the photo frame devices. One benefit of this invention was the ability for persons with limited technical knowledge to operate and enjoy it. *See* '573 Patent at 5:27-29, 9:26-29, 14:63-15:6, 15:58-16:25, 16:51-17:8, 18:16-26, 19:44-20:21, 21:38-22:9, 23:37-41, 24:41-48, 27:40-65, 28:3-29:59, Appendix A, Figure 10. This claim requires that the frame device will only accept data from an authenticated remote server, reducing the risk of unauthorized access.

248. Dependent claim 6 of the '573 Patent recites the additional technological improvement of "wherein input to said user interface is permitted when said user is authenticated by said at least one server system." This technological improvement increases security for remote

access to the patented devices, in combination with the secure communications protocol with the server in claim 1. *See* '573 Patent at 5:27-29, 9:26-29, 14:63-15:6, 15:58-16:25, 16:51-17:8, 18:16-26, 19:44-20:21, 21:38-22:9, 23:37-41, 24:41-48, 27:40-65, 28:3-29:59, Appendix A, Figure 10.

249. In identifying what the claims are directed to, it is important to focus on the claimed improvements over the prior art as reflected in the claims themselves.

250. For example, claim 1 of the '930 Patent requires a "digital display apparatus having an integrated housing" in combination with "an image display region on an outside surface of said integrated housing," in further combination with "a memory in an inside of said integrated housing" in which that memory is required to comprise "a plurality of image data files, security information comprising authentication information for a first remote server system and a unique identifier for said digital display apparatus, and a current version of onboard software," in further combination with "a processor" with a claimed configuration, namely that it is "configured to control the display of image data from said plurality of image data files in said display region in accordance with said onboard software in said inside of said integrated housing," in further combination with "communication circuitry" also with a claimed configuration, specifically "configured to engage a network medium in said inside of said integrated housing under the control of said processor." '930 Patent, claim 1. The above elements are then also combined with elements relating to specific functions of the onboard software in memory, namely that the onboard software must comprise "an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region," combined with "a remote connection function configured to automatically initiate communications with said first remote server system across said network medium," with the remote connection function specifically configured "to send a request for image data to said first remote server system after

initiating said communications" and "to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files," further in combination with "an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system," further combined with "a software update function configured to obtain an updated version of said onboard software from said server and to replace said current version of said onboard software in said memory with said updated version." '930 Patent, claim 1. The dependent claims further combine the above requirements with additional ones. Dr. Johnson's alleged abstract idea of "a digital picture frame connected to the Internet" (or, in citing the Court's language of "a digital picture frame automatically accessing a remote data repository") fails to address the totality of the claimed features and their combined effect, as does his oversimplification of the claim elements. *See* Johnson ¶¶451, 450-56, 472.

251. The claim elements are designed to overcome shortcomings in the prior art. For example, Claim 1 of the '930 Patent recites "a memory in an inside of said integrated housing, said memory comprising a plurality of image data files, security information comprising authentication information for a first remote server system and a unique identifier for said display apparatus, and a current version of onboard software." As explained above, one technological shortcoming of prior art devices was the lack of internal memory sufficient to store image data files such that external memory such as memory sticks had to be used. In addition, the claimed memory includes "security information comprising authentication information for a first remote server system and a unique identifier for said display apparatus." Prior photo frame devices did not have the ability to communicate with remote server systems, so the addition of such ability was a technological improvement. *See* '573 Patent at 1:50-53, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-30. The

claimed authentication information for a first remote server system and unique identifier for the display apparatus are used to create the secure communications protocol that allowed secure transfer of image and preference data to only the specific authorized display device as explained above and in additional elements below. *See* '573 Patent at 5:27-29, 9:26-29, 17:48-53, 18:3-4, 18:16-26, 20:11-14, 21:39-43, 24:40-45, 28:30-29:59.

252. Claim 1 of the '930 Patent recites "communication circuitry configured to engage a network medium in said inside of said integrated housing under the control of said processor." This claim element is a significant improvement on prior art frame devices, which did not have such network access circuitry. *See* '573 Patent at 1:47-58, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-30. By placing this circuitry inside of a frame device, the inventors created a device that could be used by the device owner without the need for an external local computer to download and transfer image files, software updates or other data. See '573 Patent at Abstract, 1:47-58, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-53, 7:7-11, 7:30-37, 8:31-52, 9:8-10:20, 12:41-67, 13:40-14:62, 15:6-40, 16:26-50, 18:16-56, 19:13-25, 24:21-48, 25:16-26:15, 28:13-25, 30:44-31:14.

253. Claim 1 of the '930 Patent recites "a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files." As described above, this claim element is a significant technological improvement over prior photo frame devices, because it allowed users with little technical know-how and without a separate computer to have a photo frame device that would make automated requests for image data from a network server and retrieve them directly to the frame device, rather

than requiring the user to download, format, save, and transfer image data files through a separate computer device. See ’573 Patent at 6:45-55, 8:45-52, 9:8-9, 9:30-10:7, 12:41-13:10, 13:52-64, 16:26-50, 24:28-38, 25:30-26:15, 26:31-39. Unlike prior art products and systems, the request for image data claimed did not need to know what specific data was being requested; instead, for the patented device the data to be sent is determined by the server system, but it is data that is specific to that unique device. See ’573 Patent at 5:11-23, 8:1-52, 9:19-29, 11:50-60, 15:27-40, 25:8-26, 27:40-28:25, 29:41-49.

254. Claim 1 of the ’930 Patent recites “an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system.” This claim element is a technological improvement over prior art and solved the potential problem of insecure data transfer involving the photo frame devices. See ’573 Patent at 9:26-29, 17:48-53, 18:16-26, 24:40-45, 28:30-29:59. As previously discussed, one benefit of this improvement was the ability for persons with limited technical knowledge to operate and enjoy it. See ’573 Patent at 10:9-20, 26:13-15. This claim requires that the frame device will only accept data from an authenticated remote server, reducing the risk of unauthorized access. A specific two-way authentication function is further claimed in dependent claims 2 (“wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system”) and 3 (“wherein said authentication function is further configured to provide device authentication information to said first remote server system prior to obtaining image data from said first remote server system.”).

255. Claim 1 of the ’930 Patent recites “a software update function configured to obtain an updated version of said onboard software from said server and to replace said current version of said onboard software in said memory with said updated version.” This claim element is a

technological improvement over prior photo frame devices, which required users to have a separate computer for downloading and installing relevant updates through physical transfer. See ’573 Patent at 1:45-58, 2:15-32, 5:20-23, 6:42-61, 8:42-52, 9:23-51, 10:3-20, 11:50-63, 14:27-15:6, 15:27-40, 19:13-25, 20:62-21:12, 25:16-26, 28:30-34, 29:43-57. Further, by adding this feature to the claimed invention, the inventors added the ability to remotely add new features, control settings, and change preferences in the claimed frame devices from authorized networked servers or computers via the secure, authenticated communications structure. *See* ’573 Patent at 1:45-58, 2:15-32, 5:20-23, 6:42-61, 8:42-52, 9:23-51, 10:3-20, 11:50-63, 14:27-15:6, 15:27-40, 19:13-25, 20:62-21:12, 25:16-26, 28:30-34, 29:43-57.

256. Dependent claim 4 of the ’930 Patent adds a limitation “wherein said onboard software further comprises an initialization function configured to prompt said first remote server system to associate a record with said digital display apparatus.” As described above, this claimed feature allows the frame device to register with the remote server without the end user needing to use a separate computer or web interface, reducing complexity and the requirement for technological know-how. *See* ’573 Patent at 8:61-9:1, 13:65-36, 17:9-40, 19:63-20:21, 21:36-44, 21:64-67, 24:19-25:27, 27:25-65, Figure 8. The claimed record association (registration) process ensures that images and preferences sent to the device from the server system are directed to the correct device through the claimed secure communications protocol. *See* ’573 Patent at 8:61-9:1, 13:65-36, 17:9-40, 19:63-20:21, 21:36-44, 21:64-67, 24:19-25:27, 27:25-65, Figure 8.

257. Dependent claims 5, 6 and 15 of the ’930 Patent (“wherein said digital display apparatus is configured to display an account initialization message,” “wherein said account initialization message prompts a user to create an account with said first remote server system,” and “wherein said digital display apparatus is configured to display an account initialization

message served from said server system") allow a user to initialize or create an account for purposes of registration, further eliminating the requirement for a separate computer and technical know-how if the account was not previously set up. *See* '573 Patent at 7:23-32, 24:49-58.

258. Dependent claim 7 of the '930 Patent ("wherein said memory comprises a connection timing parameter that indicates a timing interval for said digital display apparatus to automatically initiate periodic connections with said first remote server system") further improves on the remote access improvements over the prior art frame devices by periodically checking with the remote server for updates to image data, preferences, and software. *See* '573 Patent at 2:37-39, 4:2-12, 7:21-25, 10:3-7, 11:36-47, 14:44-49, 20:30-40, 21:1-12, 24:21-34, 27:17-22, 28:13-23. This technological benefit over prior art solves multiple actual and potential shortcomings, as explained above, including the ability to lessen the cost and size of memory in the frame device due to periodic replacement of images from those stored on a remote server, and the ability to more quickly update and add features to devices through periodic requests that would otherwise wait an indeterminate amount of time if requiring user initiation. *See* '573 Patent at 2:37-39, 4:2-12, 7:21-25, 10:3-7, 11:36-47, 14:44-49, 20:30-40, 21:1-12, 24:21-34, 27:17-22, 28:13-23.

259. As another example, claim 1 of the '562 Patent is again more complex than Dr. Johnson's summary. *See* Johnson ¶454. The claim is directed to improvements in an image display device, including improvement in that the device can receive content comprising image data for display from a networked server system. This claim requires a "digital display screen" in combination with a "central processing unit," a "video controller configured to control display of said content on said display screen," in further combination with "a communications interface configured to communication with said server system via said communications network," and "a memory" that comprises specific additional elements, namely a "unique identifier for said

apparatus," "computer readable instructions different from said [image data] content for controlling the operation of said apparatus," and "a version identifier for said computer readable instructions." '562 Patent, claim 1. These requirements are further combined with elements relating to specific instructions required in the computer readable instructions, including instructions to cause the apparatus to "upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network," combined with "sending by said apparatus said unique identifier to said server system," further combined with "sending by said apparatus said version identifier to said server system," combined with "prompting by said apparatus a user of said apparatus to create an account at said server system," further combined with "receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system," further combined with "updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions," further combined with "receiving by said apparatus updated content from said server system," further combined with "displaying by said apparatus said updated content on said display screen." '562 Patent, claim 1. Dependent claims further combine the above requirements with additional ones. Dr. Johnson's alleged abstract idea of "a digital picture frame connected to the Internet" (or, in citing the Court's language of "a digital picture frame automatically accessing a remote data repository") fails to address the totality of the claimed features and their combined effect. *See* Johnson ¶¶451, 450, 454, 472.

260. Claim 1 of the '562 Patent includes elements aimed at improving on shortcomings in prior products. For example, Claim 1 of the '562 Patent recites "a communications interface configured to communicate with said server system via said communications network." As

described above and in relation to claim 1 of the ’930 Patent, the addition of a network communications interface into an image display device was a technological improvement that corrected several shortcomings. By placing this interface inside of a display device, the inventors created a device that could communicate with and obtain image and software updates from a remote server system without the need for an external local computer. See ’573 Patent at Abstract, 1:47-58, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-53, 7:7-11, 7:30-37, 8:31-52, 9:8-10:20, 12:41-67, 13:40-14:62, 15:6-40, 16:26-50, 18:16-56, 19:13-25, 24:21-48, 25:16-26:15, 28:13-25, 30:44-31:14.

261. Claim 1 of the ’562 Patent recites “a memory comprising a unique identifier for said apparatus, . . . and a version identifier for said computer readable instructions.” As described above and in relation to claim 1 of the ’930 Patent, the addition of a unique identifier in memory allows the product to be authenticated to the server system as part of the secure communications protocol. See ’573 Patent at 5:27-29, 9:26-29, 17:48-53, 18:3-4, 18:16-26, 20:11-14, 21:39-43, 24:40-45, 28:30-29:59. This is indicated in the later claim element, “sending by said apparatus said unique identifier to said server system.” The claimed version identifier in memory allows the invention the technical benefit over prior art of identifying the current software version to the server system using the secure communications protocol so the server system can provide the benefit of software updates if needed. See ’573 Patent at 11:50-60, 20:62-21:1. This is indicated in the later claim element, “sending by said apparatus said version identifier to said server system.”

262. Claim 1 of the ’562 Patent recites “computer readable instructions comprising instructions for causing said apparatus to perform the steps of . . . upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network.” As described above, this claim element is

a significant technological improvement over prior photo frame devices and overcame shortcomings in prior networked computing devices, because it allowed users with little technical know-how and without a separate computer to have a photo frame device that would connect to a remote server for initial setup with minimal input, rather than requiring the user to download, format, save, and transfer image data files through a separate computer device. See '573 Patent at 6:50-55, 8:45-52, 9:8-9, 9:30-10:7, 12:41-13:10, 13:52-64, 16:26-50, 24:28-38, 25:30-26:15, 26:31-41.

263. Claim 1 of the '562 Patent recites "sending by said apparatus said unique identifier to said server system." As described above and in relation to claim 1 of the '930 Patent, the claimed unique identifier for the display apparatus is used to create the secure communications protocol that allowed secure transfer of image and preference data to only the specific authorized display device. See '573 Patent at 5:27-29, 9:26-29, 17:48-53, 18:3-4, 18:16-26, 20:11-14, 21:39-43, 24:40-45, 28:30-29:59.

264. Claim 1 of the '562 Patent recites "sending by said apparatus said version identifier to said server system." This claim element is a technological improvement over the prior art because it minimizes the need for software downloads and shifts identification of update requirements from the image display device to the network server. See '573 Patent at 5:27-29, 9:26-29, 11:50-60, 17:48-53, 18:3-4, 18:16-26, 20:11-14, 20:62-21:1, 21:39-43, 24:40-45, 28:30-29:59. Sending a version identifier to the server system identifies with minimal processing and communication what software is currently found within the image display device. See '573 Patent at 5:27-29, 9:26-29, 11:50-60, 17:48-53, 18:3-4, 18:16-26, 20:11-14, 20:62-21:1, 21:39-43, 24:40-45, 28:30-29:59. The remote server can then use that information to determine whether software updates are required, and if so, which update(s) should be sent to that particular device via the

secure communications protocol. This also eliminates the need for a user to locate the software version, compare that software version to updates available for the device using the Internet or another method using a separate device or the image display device, download relevant updates, and transfer and/or install those updates on the device. This method also reduces the chance for mistakes and increases security by ensuring that the transfer of version information and the download of software updates occur only within secure communications with authorized remote servers. See ’573 Patent at 5:27-29, 9:26-29, 11:50-60, 17:48-53, 18:3-4, 18:16-26, 20:11-14, 20:62-21:1, 21:39-43, 24:40-45, 28:30-29:59. The updated software identified and sent by the remote server and then installed in the image display device is disclosed in the later claim elements “receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system” and “updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions.”

265. Claim 1 of the ’562 Patent recites “prompting by said apparatus a user of said apparatus to create an account at said server system.” As described above in relation to claims 1, 5, 6 and 15 of the ’930 Patent, this technological improvement allows a user to initialize or create an account for purposes of registration, further eliminating the requirement for a separate computer and technical know-how if the account was not previously set up. See ’573 Patent at 7:23-32, 8:61-9:1, 13:65-36, 17:9-40, 19:63-20:21, 21:36-44, 21:64-67, 24:19-25:27, 27:25-65, Figure 8.

266. Claim 1 of the ’562 Patent recites “receiving by said apparatus updated content from said server system” and “displaying by said apparatus said updated content on said display screen.” The technological innovation in these claim elements of using a remote server for image upload, processing and storage for later viewing in a user device reduced the device complexity and cost by minimizing the need for large amounts of memory and reducing requirement for

storage, processing and transfer in a user's separate computer. See '573 Patent at Abstract, 7:12-22, 8:61-9:29, 11:17-24, 13:65-16:25 21:62-22:27, 23:42-55, 26:42-28:24. Claim 20 adds the technological innovation of remotely adding new features to the device through such updates ("wherein said updated computer readable instructions comprise instructions for adding new functionality to said apparatus"), again without a user needing technical know-how or use of a separate computing device. *See* '573 Patent at 1:45-58, 2:15-32, 5:20-23, 6:42-61, 8:42-52, 9:23-51, 10:3-20, 11:50-63, 14:27-15:6, 15:27-40, 19:13-25, 20:62-21:12, 25:16-26, 28:30-34, 29:43-57.

267. Claim 4 of the '562 Patent includes the limitation of "wherein said computer readable instructions comprise instructions for causing the apparatus to receive location information of said apparatus from said server system." This technological innovation again reduces complexity and the need for a customer to input location data through a visual user interface on the device for purposes of, e.g., establishing the time zone and clock settings or related preferences. *See* '573 Patent at 8:45-47, 9:32-10:7, 10:23-35, 20:11-29, 20:41-61.

268. Claim 11 of the '562 Patent adds the limitation of "wherein said computer readable instructions comprise instructions for causing said apparatus to transmit metadata to said server system." This technological improvement allows the image display device to send metadata such as status information, configuration data or connectivity information to the remote server, which the remote server can use, e.g., to diagnose technical problems and/or identify needed software updates, potentially avoiding significant failures. *See* '573 Patent at 17:53-65, 18:23-34, 29:22-59, Figure 10. This overcomes issues with similar prior devices that did not allow for remote diagnostics or did not have a means for informing a user of potential failures until the device became inoperable. *See* '573 Patent at 1:50-53, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-30.

269. Claims 16 and 17 of the '562 Patent add limitations relating to the bidirectional authentication security protocol ("wherein said computer readable instructions comprise instructions for causing said apparatus to transmit authentication information to said server system" and "wherein said computer readable instructions comprise instructions for causing said apparatus to receive authentication information from said server system"). As explained above and in relation to claim 1 of the '930 Patent, these claim elements are a technological improvement over prior art and solved the potential problem of insecure data transfer involving the photo frame devices. As previously discussed, one benefit of this improvement was the ability for persons with limited technical knowledge to operate and enjoy it. The claimed secure communications protocol allowed secure transfer of image and preference data to only the specific authorized display device, overcoming potential security issues with prior network-enabled devices. *See* '573 Patent at 5:27-29, 9:26-29, 14:63-15:6, 15:58-16:25, 16:51-17:8, 18:16-26, 19:44-20:21, 21:38-22:9, 23:37-41, 24:41-48, 27:40-65, 28:3-29:59, Appendix A, Figure 10.

270. As another example, claim 1 of the '656 Patent is also more complex than the oversimplification by Dr. Johnson. *See* Johnson ¶455. Claim 1 requires the image display device to have "a central processing unit" in combination with "a display screen for displaying [] image data" that is "received from a server system," further in combination with "a communications interface configured to communicate via a communications network," further combined with "a memory," wherein the memory comprises "computer readable instructions for controlling the operation of said display device," and specifically said instructions "caus[e] said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system." The communications session initiated by the device and controlled by the instructions in memory is

then further required to comprise the steps of "sending a request for image data to said server system via said communications network," "receiving image data and authentication information from said server system in response to said request," "authenticating said server system," "storing said received image data in said memory," "displaying said image data on said display screen," "receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network," and "automatically updating said computer readable instructions for controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device." '656 Patent, claim 1. These requirements are further combined with the requirement that the "said computer readable instructions for controlling the operation of said display device further compris[e] instructions for causing said display device to instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device." '656 Patent, claim 1. Dr. Johnson's alleged abstract idea of "a digital picture frame connected to the Internet" (or, in citing the Court's language of "a digital picture frame automatically accessing a remote data repository") fails to address the totality of the claimed features and their combined effect. *See* Johnson ¶¶451, 450, 455, 472.

271. Claim 1 of the '656 Patent also includes elements designed to overcome shortcomings in prior products. For example, Claim 1 of the '656 Patent recites "a communications interface configured to communication via a communications network." As described above and in relation to claim 1 of the '930 Patent, the addition of a network communications interface into an image display device was a technological improvement that corrected several shortcomings. By placing this interface inside of a display device, the inventors created a device that could be used by an end user without the need for an external local computer. See '573 Patent at Abstract, 1:47-

58, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-30, 7:12-22, 8:61-9:29, 11:17-24, 13:65-16:25, 21:62-22:27, 26:42-28:24, 30:44-31:14.

272. Claim 1 of the ’656 Patent recites “a memory comprising computer readable instructions for controlling the operation of said display device, said computer readable instructions for controlling the operation of said display device comprising instructions for causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system.” As explained above and in relation to claim 1 of the ’562 Patent, this claim element is a significant technological improvement over prior photo frame devices and overcame shortcomings in prior networked computing devices, because it allowed users with little technical know-how and without a separate computer to have a photo frame device that would connect to a remote server for initial setup with minimal or no input other than making connections of the device to a power source and communications source, rather than requiring the user to download, format, save, and transfer image data files through a separate computer device. *See* ’573 Patent at 6:50-55, 8:45-52, 9:8-9, 9:30-10:7, 12:41-13:10, 13:52-64, 16:26-50, 24:28-38, 25:30-26:15, 26:31-41.

273. Claim 1 of the ’656 Patent recites elements of the communications session with the following technological improvements: “sending a request for image data to said server system via said communications network,” “receiving image data and authentication information from said server system in response to said request,” and “authenticating said server system.” These claim limitations, as explained above, are a significant technological improvement over prior digital display devices. By putting the images on a remote server, with the device requesting image data and then receiving image data and authentication from the server system in response, the device is able to be smaller and cheaper while maintaining security of information. *See* ’573 Patent at

6:45-55, 8:45-52, 9:8-9, 9:30-10:7, 12:41-13:10, 13:52-64, 16:26-50, 24:28-38, 25:30-26:15, 26:31-39, 27:17-22; Schiller Depo. at 72:23-73:3. These steps also prevent requiring the user to download, format, save, and transfer image data files through a separate computer device and in a way that may not be as secure. *See* '573 Patent at 5:11-23, 8:1-52, 9:19-29, 11:50-60, 15:27-40, 25:8-26, 27:40-28:25, 29:41-49.

274. Claim 1 of the '656 Patent recites elements of the communications session with the following technological improvements: "storing said received image data in said memory" and "displaying said image data on said display screen." As discussed above and in the specification, this technological improvement over prior art overcame the deficiencies of using external storage such as a Memory Stick to transfer image data from an external computer to the display device. This included the need for someone transferring image data to the device to have physical access to the device, and have the technical know-how to make such a transfer. *See* '573 Patent at 1:49-67, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-30, 8:35-41, 11:18-24, 19:16-19, 25:33-38, 28:13-29.

275. Claim 1 of the '656 Patent recites elements of the communications session with the following technological improvements: "receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network" and "automatically updating said computer readable instructions for controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device." These limitations are an improvement over prior art because they allow simplification of the device user interface, despite maintaining complex functionality. These improvements also allow for maintenance and update of the device, including display preferences, without needing direct access to the device, use of a standalone separate computer, or

an individual with the know-how necessary to download, transfer and install such updates in physical contact with the device. *See* '573 Patent at 1:45-58, 2:15-32, 5:20-23, 6:42-61, 8:42-52, 9:23-51, 10:3-20, 11:50-63, 14:27-15:6, 15:27-40, 19:13-25, 20:62-21:12, 25:16-26, 28:30-34, 29:43-57.

276. Claim 1 of the '656 Patent recites "said computer readable instructions for controlling the operation of said display device further comprising instructions for causing said display device to instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device." This limitation is an improvement over prior art because it allows for creation of a web-browser-based device management interface for use with the remote server system not present in the prior art. This interface can then be used by authorized users to manage device settings and preferences remotely through the secure communications protocol that allows secure transfer of image and preference data to only the specific authorized display device. *See* '573 Patent at 1:45-53, 2:15-22, 2:56-61, 3:66-4:12, 5:24-35, 7:23-37, 9:5-19, 14:18-15:33, 15:52-64, 21:38-43, 22:3-9, 22:28-44, Figure 5.

277. Dependent claim 2 of the '656 Patent further adds the technological improvement of "wherein said computer readable instructions for storing said image data in said memory further comprise instructions for causing image data previously stored in said memory to be replaced with said received image data." This technological advancement solved prior art issues of limited memory by replacing image data with newly received image data during the update process, which reduced data usage, saving memory resources and lowering the cost of the device by being able to use less internal memory. *See* Schiller Depo. at 72:23-73:3; *see also* '573 Patent at 1:49-67, 2:15-32, 2:56-61, 3:66-4:12, 5:30-35, 6:14-30, 8:35-41, 11:18-24, 19:16-19, 25:33-38, 28:13-29.

278. Dependent claims 5-8 of the ’656 Patent add other technological improvements regarding device preferences and control information (“wherein said memory further comprises preference information for controlling the display of said image data by said display device,” “wherein said preference information comprises communication timing information for specifying the timing of sending requests for image data to said server system,” “wherein said preference information comprises display timing information for specifying the timing of displaying said image data on said display screen,” and “wherein said preference information comprises an image display list”). This technological improvement over the prior art allows the patented invention to change the connection and display preferences, including when or how often the device connects with the remote server system, what images are displayed, and when and how often images are displayed or rotated. *See* ’573 Patent at 2:37-39, 4:2-12, 7:21-25, 10:3-7, 11:36-47, 14:44-49, 17:50-65, 19:13-25, 20:30-61, 21:1-12, 24:21-34, 25:41-47, 26:36-41, 27:17-22, 28:13-29. One advantage this provided was for devices connected over a telephone line, in which the connection time setting was able to be used to make connections at a less expensive time or a time less likely to interfere with the user. *See* ’573 Patent at 9:35-10:2, 11:36-45. In combination with the other limitations of claim 1, these limitations allowed these settings to be remotely managed from the server system or a web-based user interface. Remote management also allowed these preferences and settings in the patented devices to be updated without a user having technical know-how and while maintaining a simple user interface. *See* ’573 Patent at Abstract, 7:7-49, 8:61-9:29, 10:9-20, 13:65-16:25, 21:38-22:27, 26:18-28:29.

279. As acknowledged by Dr. Johnson, the patent claims each claim a device, namely a digital display device or picture frame unlike those that previously existed (or in the case of the ’573 Patent, a system comprising such an improved digital picture frame). The claimed device

and system are tangible products that interact in the real world with other devices and with humans to complete processes that are unable to be done by humans alone. The claims are directed toward these physical interactions between devices or between devices and humans. Such interactions, for example, involve digital signaling and communications including instructions, data processing, remote data storage and access, image display, and physical human user inputs (including plugging in power and network connections, registering devices, or inputting settings or preferences into the device). These interactive, tangible elements are key to, rather than ancillary to, the claims, such that the claims are directed to these tangible elements as discussed below.

280. In addition, for example, the ’930 Patent claims a specific arrangement and design of physical properties and components, including a “digital display apparatus having an integrated housing, said integrated housing comprising, an image display region on an outside surface of said integrated housing, a memory in an inside of said integrated housing, . . . a processor . . . in said inside of said integrated housing, . . . communications circuitry . . . in said inside of said integrated housing under the control of said processor.” ’930 Patent, claim 1. The ’573 Patent claims a frame device “comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs.” ’573 Patent claims 2, 6, 19. As identified in the specification, aesthetics and design are important to the field of art and claimed invention, and the collection of physical, tangible elements in an integrated housing, or the appearance of the photo frame display, are each a focus of their respective claims. *See* ’930 Patent at 1:29-34, 6:66-7:5, 8:28-31, 8:31-38, 10:53-11:6, 13:2-22; ’573 Patent at 1:21-27, 7:1-7, 8:31-35, 8:35-41, 10:64-11:17, 13:17-39.

281. Dr. Johnson argues that the patents do not describe “actual solution[s]” or “specific technical solution[s]” to problems identified in the prior art and instead “only identifies computing components and processes.” *See* Johnson ¶460.

282. I disagree. As described further herein and with respect to my analysis of Secondary Considerations of Non-Obviousness, the claimed inventions (including as implemented in the Ceiva Frame device) were significant technological improvements on existing digital picture frames and systems that solved multiple deficiencies in prior products. As acknowledged by the Court in its Order Denying Amazon's Motion to Dismiss:

> For example, the specification states that the invention solves the problem that previously, storage media had to be physically inserted in a frame. (See, e.g., '573 Patent at col. 2:15-16 ("A problem with prior art mechanisms, such as the one illustrated in FIG. 1a, is that the user must physically provide storage media 103 to the device.").) The specification further states that functions in the prior art "cannot be remotely updated, modified, or otherwise changed." (Id. at col. 2:23-25.) The FAC likewise supports Plaintiff's position, with specific allegations that do more than simply append conclusory statements. (See, e.g., FAC ¶ 71 ("As discussed in the specification, another problem with then-existing digital picture frames was that the manner in which photos were displayed on the digital picture frame could not be remotely controlled by an authorized user from a remote location via a website."); see also id. ¶¶ 61-72.)

Ceiva I Dkt. 48 pp.12-13; *see also* '573 Patent at 1:56-58, 2:17-22, 2:33-39, and 2:41-4:6. Although the Court's analysis occurs in relation to Step 2, it is also relevant to Step 1 in this regard.

283. For at least the reasons stated above, I conclude that each asserted claim is directed to patent-eligible subject matter under 35 U.S.C. §101.

B. Alice Step 2

284. In my opinion, in addition to being directed to patent-eligible concepts under Step 1 of the *Alice* test, each asserted claim is directed to eligible subject matter under Step 2 and Dr. Johnson has failed to show that the claims lack an inventive concept. The claims of each patent contain inventive concepts sufficient to ensure that the claim in practice amounts to significantly more than a patent on any ineligible concept. I incorporate my analysis related to Alice Step 1 above as if recited herein.

285. Dr. Johnson argues that the claim elements "add nothing inventive and recite only a combination of functional results, implemented using only well-understood, routine, and conventional computing technology." Johnson ¶461. I disagree.

286. Among other things, it was not routine, conventional, or well-known to have a digital frame device that could be remotely controlled and updated. The claims as an ordered combination recite an inventive concept that is more than just a networked digital picture frame. The claims recite specific elements, including an unconventional distributed architecture, but also technological solutions of authentication and security, ensuring that the frame device only receives authorized content and updates, as well as improvements relating to device setup and software updates, ensuring that the system remains up-to-date and operational, and unconventional use of cloud storage, automated setup, and a remote user interface. Perhaps the best evidence showing that the claimed system was not well-understood, routine or conventional is the outstanding industry praise heaped on the commercial embodiment—the Ceiva Frame.

287. In analyzing Step 2, the Court found an issue of fact relating to whether the combination of limitations in the patents disclose an inventive concept that transforms what the Court found to be an abstract idea into a patentable invention. The court stated:

> To the contrary, Plaintiff identifies a specific configuration of limitations in the claims: "a unique identifier stored in memory, a frame that initiates communications with the server, and a server that automatically distributes updated content to the frame." (Opp'n at 22; '562 Patent, claim 1 (reciting an apparatus for displaying content, a memory comprising a unique identifier, initiating a communications session with server system, and receiving updated readable instructions and updated content); '930 Patent, claim 1 (reciting digital display apparatus, memory comprising a unique identifier, and a remote connection function configured to automatically initiate communications with a remote server system); '573 Patent, claim 19 (reciting a system for distributing image data comprising periodically relaying image data when the picture frame automatically issues a request for image data).) The specification of the Asserted Patents supports Plaintiff's assertion that this specific arrangement was unconventional and adds an inventive element because the specific configuration allows content to be sent to

> the frame automatically, without user input. In other words, the specific configuration of components is the inventive concept for realizing the abstract idea of a digital picture frame that can automatically access a remote repository.

Ceiva I Dkt. 48 p.12.

288. Although I believe the Court reached an incorrect result with respect to Step 1 as explained above, the Court is correct in concluding that the combined limitations in the patent claims disclose an inventive concept in Step 2.

289. Dr. Johnson's "analysis" is an oversimplification of the ordered combination of claimed features for each claim. The claims are actually directed to improvements in image display devices such as digital photo frames, and in the case of the '573 Patent, to an improved system integrating such improved display devices.

290. The specification expressly identifies deficiencies of prior art digital display devices that are tied to the specific limitations recited the claims. '573 Patent at 1:45-2:44.[41] One problem with prior art digital picture frames, such as the Sony CyberFrame, was that "the user must physically provide storage media 103 to the device. Thus, a person who does not have physical access to the device cannot introduce new images into the device." '573 Patent at 2:15-19. Such a conventional frame device "cannot be controlled from a remote location. For example, making changes to a website cannot control the behavior of the control mechanism." '573 Patent at 2:19-22. "A further problem is that the functions offered by control mechanism 109 cannot be remotely updated, modified, or otherwise changed. For example, a new feature … cannot be added by transmitting a software update to the device from a remote source." '573 Patent at 2:23-28.

291. Additionally, the specification discusses "several techniques used to send and receive data across [prior art] computer networks and explains the limitations and disadvantages

[41] For ease of reference, the '573 Patent specification is cited here.

associated with such techniques." '573 Patent at 2:41-44; see also id. at 2:45-6:30. Prior art email systems, for example, provided "users with a way to transmit data from one computer to another computer." '573 Patent at 3:1-2. However, "[a] problem … is that to receive and view images recipients must have physical access to a client computer containing a client software program configured to obtain mail data." '573 Patent at 3:24-27. "An additional problem with using [prior art] electronic mail systems is that in order to receive data the recipient must know how to navigate around the operating system and how to use the program utilized to obtain the data." '573 Patent at 3:32-35. Such prior art email systems could not "automatically connect to an image source, obtain image data for display, and then automatically display the image data according to a set of predetermined preferences." '573 Patent at 3:40-43. "Additionally, the receiver cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences." '573 Patent at 4:4-6. "Furthermore, the receiver cannot set the behavior characteristics of the electronic mail client unless physically present at the client." '573 Patent at 4:10-12. The claims include specific elements that are directed to solving those technical problems.

292. Furthermore, prior art "client pull" systems, such as web browsers, also had drawbacks that the inventors intended to overcome. "A problem with utilizing client pull to distribute data, is that information about what data is to be disseminated to the client computer must be contained in the initial request." '573 Patent at 5:11-13. The web server "is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g., onboard software updates)." '573 Patent at 5:20-23. "Another problem associated with client pull is that it does not provide a way to ensure data is displayed only to an intended recipient (e.g., a particular device and/or a particular user)." '573 Patent at 5:24-27. A web server, for example, "does not

provide a way to ensure that data intended for display at a certain device is only sent to that device (e.g., a device with a unique serial number)." '573 Patent at 5:27-30. "An additional problem is that client 127 cannot be directed to request data without input or direction from a user residing at client 127. For example, a user residing at client 128 cannot control the behavior of client 127. Systems utilizing client pull do not have a mechanism for control the request patterns of multiple devices." '573 Patent at 5:30-35. The claimed combination of elements overcome these technical limitations offering an improved system with new functionality.

293. Additionally, prior art "server push" systems, such as for delivering stock market quotes by subscription, also had drawbacks that the inventors purposefully sought to overcome. "A problem with server push systems is that data is transmitted in a unidirectional manner. For example, data may be sent from server 170 to client computer 177 using server push techniques, but data cannot be transmitted from client computer 175 to client computer 177." '573 Patent at 6:14-18. "Another problem associated with server push is that it does not provide a way to ensure data is displayed only to an intended recipient (e.g., a particular device and/or a particular user). Web Server 170, for example, does not contain a mechanism for ensuring that data is only sent to devices having a certain serial number." '573 Patent at 6:18-24.

294. "None of the prior art devices and/or systems described provide a way to distribute image data to a [sic] customizable frame devices. The prior art lacks a mechanism for remotely customizing the behavior of each frame device and does not have a distribution scheme configured to distribute image data to each frame device." '573 Patent at 6:25-30.

295. As described in the summary of the invention, the claims are directed to a system "for distributing picture mail to a frame device," "a self-configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric

(e.g. a computer network)"; a person who "wants to display an image on the frame device … may do so by transmitting the image data to the repository"; the frame device "is programmed to connect to the repository and obtain new images for display"; once connected to the network, the frame device "may also use the opportunity to update the device's onboard software"; "the frame device is self-aware and requires only a minimal amount of input from the user"; "software that provides the frame device with its operational logic may be automatically upgraded without input from the user"; furthermore, "[t]he type of images and the frequency with which such images are displayed is configured remotely via a graphic user interface called a picture box"; "the picture box is accessible via a web browser" and "provides a way to customize the behavior characteristics of the frame device to conform to the wishes of the user." '573 Patent at 6:33-7:1. "The data repository is populated with image data," for example, with image data submitted "to a picture mail address associated with the target frame device," and the user "may specify filter criteria which establishes what network addresses (e.g. picture mail address) are authorized to populate the data repository," with "filter criteria and other information such as the behavior characteristics of each frame device … established via a picture box," which "allows the user to specify [and] mange the behavior of the user's frame device." '573 Patent at 7:12-27. "For example, the picture box provides the user with a way to specify when the frame device should connect to the data repository to obtain a [sic] image and/or software update. When an update occurs new image data and or information related to the operation and behavior of the frame device may be transmitted to the device." '573 Patent at 7:32-37.

296. The claims reflect each of the elements of the system and the claimed advances over the prior art, including (1) the networked digital picture frame device; (2) the user interface for remote control of frame device images and behavior characteristics; (3) the server system

connected to the frame device and the user interface; and (4) the ability for the frame device to automatically and securely connect to the server system, obtain software updates, obtain new images and behavior preferences, and operate according to the remotely specified behavior characteristics. The claims require a non-conventional distributed network architecture for delivering image data to and controlling the behavior of a digital display device.

297. The Ceiva Frame was a first-in-class consumer electronics device that was different from prior art digital picture frames that were not network connected, did not have a remote user interface, and could not be remotely controlled and updated. The Patents-in-Suit describe improvements in the functioning of the display device itself and improvements in other technology and technological fields.

298. The patent specification describes the improvements—an improved digital picture frame device that was, quite unconventionally, network connected to a remote user interface and server system; the user interface was physically separate from the frame device and configured to receive digital images and device setting preferences from a user, and then relay such information via a network to the server system where image data, device setting preferences, and operating software for the frame device are stored; the frame device was configured to automatically and periodically communicate with the server system via the network, authenticate the server system, and then download updated image data, setting preferences, and operating software as needed, and then display digital images automatically according to the device setting preferences specified by the user via the remote user interface.

299. The patent specification distinguishes the prior art—conventional digital frame devices could not connect to a remote server system and required manual, local, physical interaction with the digital frame device to load new images into memory, configure display

settings, and update software. Furthermore, other ways of sharing images over a network were not configured to automatically retrieve and display images on a digital frame device and lacked the ability to remotely control the behavior characteristics of the frame device.

300. The claims themselves recite the components and steps needed to obtain the claimed improvements over the prior art—explicitly requiring a frame device unconventionally networked to a remote server system and configured to, upon power up, connect to the remote server system, authenticate the server system, update onboard software, download new images and operating preferences, and display the images according to user preferences—all as part of a plug-and-play consumer electronics device requiring no technical expertise or physical interaction with the frame device.

301. Each patent includes multiple claim elements offering specific technological improvements in the field of the invention to overcome deficiencies in the prior art. And the combinations of those elements in a non-conventional way offers further inventive concepts.

302. In addressing Step 2, Dr. Johnson's piecemeal analysis identifies physical elements of one claim of each patent, and then for each physical element cites to specification language identifying that these physical elements or components can each be sourced from existing component technologies. Johnson ¶¶461-469; ¶470 (summarily describing dependent claims). But Dr. Johnson fails to address the specific combination of these elements with their respective claimed properties or functionalities. Such ordered combinations were not well-understood, routine, or conventional in the 1999 time frame.

303. Even the individual aspects were not well-understood, routine, or conventional. For example, the server system providing operating system updates, images, preferences, and other important features to a digital photo frame was uncommon. Indeed, what today would be regarded

as cloud storage was uncommon and innovative in the 1999 time frame. If these technologies were ubiquitous and generic as Dr. Johnson suggested, then he would have been able to find a single prior art reference that contained them all. It is also important not to ignore how these technologies interacted. The system described in figure 2B of the ’930 Patent has an unconventional distributed architecture with a web browser and frame, working over telecommunications lines and an ISP through proxy servers and load balancers to interact with a registration server and data repository. This was not a generic system; it was unconventional, and the complex interactions of these technologies was innovative—a point that is most clearly demonstrated by the industry praise discussed in Section X.A.

304. With respect to claim 1 of the ’930 Patent, Dr. Johnson alleges that certain claimed physical structures, such as a processor and memory, are “conventional” and that claimed onboard software is “generic,” Johnson ¶467, but Dr. Johnson provides no evidence that a conventional memory device in 1999 would comprise a combination of image data files, authentication information for a remote server, and a unique identifier for a digital display device, or that conventional software that was usable in a digital display device would comprise the combined ability to display images from files in memory on a display, automatically initiate a remote connection to a server system across a network to request image data and software updates, create a secure communication by authenticating the server system before accepting the data, and then download image data and software and update its software in memory. ’930 Patent, claim 1. Dr. Johnson has made no showing that the ordered combination of elements and features in the asserted claims are generic arrangements and were conventional at the time of the invention in any operable combination of available hardware and software.

305. With respect to claim 19 of the ’573 Patent, Dr. Johnson describes the claimed elements as comprised of “conventional computing technology.” Johnson ¶461. For example, Dr. Johnson says a “digital picture frame . . . long predated the patents.” Johnson ¶463. But it was not routine or conventional for a picture frame to be networked—indeed, that was unconventional and novel—much less configured to automatically receive and display images from a remote user. Dr. Johnson has provided no evidence that, prior to 1999, a system for distributing image data existed (much less was conventional or routine) that comprised a digital picture frame with operating system software that could operate according to user-defined preferences, and could connected via a network with a server system and remote user interface, such that the digital picture frame could obtain images, preferences and software updates from a remote user over the networked system periodically using automatic data requests. ’573 Patent, claim 19. Dr. Johnson has made no showing that the ordered combination of elements and features in the asserted claims are generic arrangements and were conventional at the time of the invention in any operable combination of available hardware and software.

306. Further, looking at claim 2 of the ’573 Patent, as explained above with respect to the authentication elements of the ’930 and ’656 Patents, a system comprising a digital picture frame would not conventionally comprise the above system elements in combination with a framed device that could also authenticate the server system before storing image data and preferences at the frame device in memory. ’573 Patent, claim 2.

307. With respect to claim 1 of the ’562 patent, again Dr. Johnson alleges that certain structures are “conventional” such as “a digital picture frame, memory, network, and servers” and alleges that some of these elements are “generic.” Johnson ¶465. But it was not conventional for a digital picture frame in 1999 to be connected to a server system through a network, much less

initiate communicate with such a server system after being connected to power and a communications source, securely authenticate itself and the server system to ensure secure and trusted communications, prompt a user to create an account on the server system, and be able to receive and utilize updated software and image data from the authenticated server system. ’562 Patent, claim 1. Dr. Johnson has made no showing that the ordered combination of elements and features in the asserted claims are generic arrangements and were conventional at the time of the invention in any operable combination of available hardware and software.

308. With respect to claim 1 of the ’656 Patent, Dr. Johnson again alleges that components of “a display device, memory, network, and server system” are “conventional,” and that the claimed “interface accessible by a web browser for managing behavior characteristics of said display device” is a “generic web browser.” Johnson ¶469. I disagree for several reasons. First, “the picture box is accessible via a web browser,” ’573 Patent at 6:62-66, the user interface is not a web browser. Although the graphic user interface may be viewed in some embodiments as a web page on a web browser, the user interface itself is a customized webpage programmed with the claimed functionality, namely “for managing behavior characteristics of said display device.” Dr. Johnson has provided no evidence that a “generic web browser” in 1999 would comprise such an interface or functionality. Further, as with the other patent claims, Dr. Johnson provides no evidence that a conventional display device in 1999 would be networked with a server system and, after being connected to power and a communications source, be able to automatically initiate communications with the server, authenticate the server system, request and receive image data and software updates, and store and use the updated images and software, all without further input from a user, or that it was conventional for a display device to instruct a server to create a web browser-accessible user interface for managing behavior characteristics of the device

remotely. ’656 Patent, claim 1. The ordered combination of elements and features in the asserted claims are not generic arrangements and were unconventional at the time of the invention in any operable combination of available hardware and software.

309. The patented digital display device (and system including the same) overcame multiple deficiencies in the prior art products such as the CyberFrame, as described above in my analysis of Step 1. *See* ’573 Patent at 1:45-2:44. For example, claim 1 of the ’930 Patent includes elements that provide at least the following benefits and advancements over the CyberFrame and other prior art products as described above: (a) the ability to communicate with a remote server system using the internal communication circuitry, rather than requiring transfer of information or data through an intermediary computer that requires greater expense, time, and know-how by the user; (b) the ability to authenticate both the remote server system the device communicates with and authenticate itself to the remote server system using a unique identifier, and not accepting data without authenticating its source, ensuring that data is communicated to and received only from authorized servers and users; (c) automatic initiation of communications with the remote server system across the network, allowing the device to be operated by a user with less technical knowledge, using a simpler user interface, and being able to download images and data without user intervention; and (d) the ability to update its onboard software automatically as needed when combined with part (c), allowing the device to update its software with the need for a user to have the time, equipment and know-how necessary to download, transfer and install the update from another computing device. The software update function as described in the specification also allows the patented device to add new features, control settings, and change preferences as instructed by authorized users or the remote server system via the secure, authenticated communications structure. The asserted dependent claims add additional technological

advancements over the prior art, including at least the following: (e) initializing or registering the device with the remote server system over the network, including the option of prompting a user to create an account if needed, eliminating the need for separate registration via a separate computing device and lowering the chance for error; and (f) periodically automatically connecting to the remote server system, which lessens the cost and size of memory in the frame device due to periodic replacement of images from those stored on a remote server, and more quickly updates and adds features to devices through periodic requests that would otherwise wait an indeterminate amount of time if requiring user initiation.

310. As another example, claim 1 of the ’562 Patent includes elements that provide at least the following benefits and advancements over the CyberFrame and other prior art products as described above: (a) the ability to communicate with a remove server system using an internal communications interface, rather than requiring transfer of information or data through an intermediary computer that requires greater expense, time, and know-how by the user; (b) the addition of a unique identifier in memory, which allows the product to be authenticated to the server system as part of the secure communications protocol by sending the unique identifier to the server system; (c) the addition of a version identifier for software in memory, which allows the device to identify the current software version by sending it to the server system using the secure communications protocol so the server system can provide the benefit of software updates if needed; (d) autonomously initiating a communications session with the remote server via the communications network when the device is connected to a power source and communications source, which allowed users with little technical know-how and without a separate computer to have a photo frame device that would connect to a remote server for initial setup with minimal input, rather than requiring the user to download, format, save, and transfer image data files

through a separate computer device; (e) sending the version identifier in memory to the server system, which allows the remote server to determine whether software updates are required, and if so, which update(s) should be sent to that particular device via the secure communications protocol, and also eliminates the need for a user to locate the software version, compare that software version to updates available for the device using the Internet or another method using a separate device or the image display device, download relevant updates, and transfer and/or install those updates on the device; it also reduces the chance for mistakes and increases security by ensuring that the transfer of version information and the download of software updates occur only within secure communications with authorized remote servers; (f) prompting a user to create an account at said server system, further eliminating the requirement for a separate computer and technical know-how if the account was not previously set up; and (g) receiving and displaying updated content on the display screen, which uses cloud storage to reduce the device complexity and cost by minimizing the need for large amounts of memory and reducing requirement for storage, processing and transfer in a user's separate computer.

311. As another example, claim 1 of the '656 Patent includes elements that provide at least the following benefits and advancements over the CyberFrame and other prior art products as described above: (a) a communications interface inside of a display device, which allowed the device to communicate directly with a server system without the need for an external local computer, reducing complexity and cost; (b) internal software that would allow users with little technical know-how and without a separate computer to have a photo frame device that would connect to a remote server for initial setup with minimal or no input other than making connections of the device to a power source and communications source, rather than requiring the user to download, format, save, and transfer image data files through a separate computer device; (c)

software that requests image data from the server, so that the device is able to be smaller and cheaper, and not requiring the user to download, format, save, and transfer image data files through a separate computer device; (d) authenticating the server through a secure communications protocol, ensuring that data received is from a trusted and secure source; (e) using internal memory instead of external memory for storage and display of image data, eliminating the need for transfer of image data from an external computer to the display device, the need for someone transferring image data to the device to have physical access to the device, and or the need of having the technical know-how to make such a transfer; (f) receiving and automatically updating control software for the device, allowing for simplification of the device user interface while maintaining complex functionality, and also allowing for maintenance and update of the device, including display preferences, without needing direct access to the device, use of a standalone separate computer, or an individual with the know-how necessary to download, transfer and install such updates in physical contact with the device; and (g) allowing for creation of a web-browser-based device management interface for use with the remote server system, which can then be used by authorized users to manage device settings and preferences remotely through the secure communications protocol that allows secure transfer of image and preference data to only the specific authorized display device.

312. As another example, claim 2 of the '573 Patent includes elements that provide at least the following benefits and advancements over the CyberFrame and other prior art products as described above: (a) a remote user interface that allows a user that is physically remote from the device to control images and preferences on the device through the server system, which allows sharing of remote images without the frame device owner requiring use of a separate computer to download, format, and transfer images and preferences to the device, or the know-how required

for such processes; (b) coupling the server system with the frame device via a communications network and using the periodic relay of image data and preferences for the benefit of cloud storage, including lessening device memory requirements in the frame device while periodically rotating through images in memory, and also allows preference data such as image lists or display instructions to be regularly updated and remotely controlled by a user on the remote user interface without needing direct contact with the device; (c) authenticating the server before storing image data and preferences in memory of the frame device, which solved the potential problem of insecure data transfer involving the photo frame devices, allowing persons with limited technical knowledge to operate and enjoy the device and reducing risk of unauthorized access.

313. For the reasons stated above, the asserted claims disclose combinations of elements that involve more than well-understood, routine, and conventional elements previously known in the industry, and each of the Patents-in-Suit disclose an inventive concept and are directed to patent-eligible subject matter.

IX. CONCEPTION AND REDUCTION TO PRACTICE OF THE INVENTIONS OF THE ’573, ’930 AND ’562 PATENTS

314. It is my opinion that the inventors, Paul Yanover and Dean Schiller, conceived of the inventions disclosed in claims 2, 6, and 19 of the ’573 Patent, claims 1-8 and 15 of the ’930 Patent, and claims 1, 4, 11, 16-17, and 20 of the ’562 Patent by at least September 16, 1999, and thereafter reasonably, continuously, and diligently worked to reduce their inventions to practice until filing the application for the ’573 Patent on December 10, 1999.

315. My opinion is based on my review of evidence submitted in this case, conversations with the inventors, and corroborating evidence, including the declaration of Dean Schiller, dated January 31, 2013, submitted to the U.S. Patent and Trademark Office during reexamination of

the '573 Patent (the "2013 Declaration"). A copy of the 2013 Declaration, together with the exhibits thereto, are attached hereto as Exhibit C.

316. Exhibit 1 to the 2013 Declaration ("DS Exhibit 1") is an *Executive Summary* dated July 11, 1999 in which Mr. Schiller and Mr. Yanover describe various aspects of their conception of the LiveFrame digital picture frame: "a picture frame that has the ability to load its own pictures directly from the Internet"; it "looks, feels and acts like any traditional picture frame, with one exception - its high resolution state-of-the-art digital screen promises up to date pictures on demand, anytime, anywhere"; "Plug in the LifeFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen"; "each … frame is labeled with its own unique identification number"; "Upon startup, the user goes to LiveFrame.com to register the frame and assign it a unique username"; "we create a LiveFrame PictureBox, a place to store online pictures that will be downloaded to the LiveFrame picture frame"; "users indicate the LiveFrame picture frame configurations"; "the LiveFrame picture frame can receive multiple pictures from its registered PictureBox"; "using the LiveFrame picture frame, users can literally email photos directly to a picture frame" and "it will be automatically downloaded to the specific frame the next time it calls in for a download"; this allows "a whole new class of non-technical users … to experience the Internet without windows, clicks or even a mouse"; the "LiveFrame picture frame handles everything, from dialing the Internet to updating its pictures."

317. The Executive Summary describes the principal components of the frame device and the web portal:

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components.

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display
- Onboard software control to allow automatic startup and "find home" capability
- Offboard power supply and onboard power transform
- Custom designed backlighting system using either cold cathode, LED, incandescent, etc..
- Custom designed picture enclosure with ability to fit into a standard traditional picture frame, thus requiring no special injection molded out packaging

2. LiveFrame.COM

The LiveFrame.COM website consists of five principle technologies; a custom designed frame registration, configuration, connection, scheduling and picture handling system. The main functional components of the site are:

- **Registration** – an online picture frame registration system that allows user to register unique picture frame identifiers to a user defined account. An online database will handle the frame to username transformations and allow for multiple frames to associate to single username accounts.

- **Configuration** – an online scheduling system that allows users to specifically designate frame characteristics including download times, download frequency, geographic location (for telecom handling)

- **Connection** - a telecommunications connection protocol to handle frame call in, identification and verification, security, error handling and transport of picture data from the online picture database to the network of registered frames.

- **Scheduling** – a scheduling system designed to allow users to manage picture frame content including folder management, marking pictures for deletion, marking pictures to be saved, subscribing to LiveChannels (discussed below) and management of user picture accounts.

- **Picture Handling** - A picture handling system that allows for picture data to be received via email to LiveFrame.COM and processed by username and password to PictureBox accounts. As well, a system that facilitates the transport of pictures from the online database to the network of registered frames.

318. Exhibit 2 to the 2013 Declaration ("DS Exhibit 2") is an *Architecture Study* dated August 12, 1999 that describes aspects of the invention as specified by Mr. Schiller and Mr. Yanover to a company (named Dr. Design) that they hired to make a digital picture frame

according to their specifications, including project description for creating a "consumer computing device" (referred to in the patent specification as a "frame device") that includes an LCD display with "control logic" and other hardware, such as "a processor, memory, modem, [and] LCD controller," that "mounts in a standard picture frame," with the "basic function" of the device being "to periodically retrieve display content and updated control information from a server database," and "to continually sequence through and display the stored content," with the "device control and display content" being managed "through other standard methods for accessing Internet Websites":

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

319. The Architecture Study specified program requirements and design goals that, among other things, the user should "consider the device as a picture frame," it "should retrieve and store between 7 and 10 pictures," "content and control information should be retained during power outage," it "should self-initialize out of the box by calling a pre-programmed 800 number to obtain set up and control information," and the device "should support remote program upgrades." DS Exhibit 2 at 1-2.

320. The Architecture Study expresses a preference to use "a processor that pSOS has been ported to" with "TCP/IP and PPP code that has already been tested and is working" to save time and money getting to market but using "a custom ASIC" for future versions. DS Exhibit 2 at 2.

321. The Architecture Study stressed that "device simplicity" was a goal, stating that "the application and software used in the unit may be fairly sophisticated," but "the user interface is very basic with only a single button for control. Plug the unit in and it starts working." DS Exhibit 2 at 2. The single button "will connect directly to processor input," with switch functions "completely under the control of the software" such that they "can be defined and changed as needed." DS Exhibit 2 at 3.

322. The Architecture Study proposed that the device "would be able to store compressed image files in 512 Kbytes of flash," that "software is stored compressed in the other 512K bytes of flash and then uncompressed and transferred to dram during device initialization," and that the flash storage "would retain the pictures and control information when the device is not powered." DS Exhibit 2 at 2.

323. The Architecture Study specified that device initialization was to be "done completely under software control" by contacting the server "as soon as power and phone dial tone can be established," enabling the device to "access a database to retrieve setup and display information." DS Exhibit 2 at 3. Thereafter, time information is "updated during the data retrieval" and then "used to schedule phone calls, picture advance periods, and dimmer times for the display." DS Exhibit 2 at 3. "Phone calls will be scheduled via the web set up and maintained by timers in the unit," with "[r]emote downloads of program information … supported in the device application" with the "same scheme … used for initial unit setup at the manufacturer." DS Exhibit 2 at 3.

324. The Architecture Study contemplated that "device electronics" would include "the LCD, backlight and PCB," and that the "PCB will be slightly larger than the display using some of the picture matting area." DS Exhibit 2 at 3.

325. A weekly status report from Doctor Design (Ceiva-A 00010136-38), dated September 2, 1999, indicates that the team worked to complete "schematic capture of Linfinity backlight inverter circuit," resolved "design issues with processor and DAA," completed "design of LCD contrast supple and control," and provided "demonstration of software dithering."

326. An email (Ceiva-A 00018731), dated September 7, 1999, shows PPP logs for connecting to an ISP.

327. An email and attachment (Ceiva-A 00017778-80), dated September 9, 1999, addresses "Communication errors," including a timeout waiting for PPP login and FTP connection error for an invalid user password:

```
3) Start Communication Link
   A) Login before PPP
      1) TIMEOUT waiting for prompt

   B) No Login
      2) TIMEOUT waiting for PPP packet


4) PPP Connection Errors
   A) LCP errors
   B) IPCP errors


5) DNS Errors
   A) Nameserver un-reachable
   B) Unable to resolve name


6) FTP Connection Error
   A) TIMEOUT - No Response
   B) Connection Refused
   C) Invalid User:password
```

328. A weekly status report from Doctor Design (Ceiva-A 00010131-34), dated September 10, 1999, indicates that the team worked on "completing hardware design and schematics," and "writing a general planning and design document" for software tasks.

329. Product development notes from September 14, 1999 (Ceiva-A 00011264-70) discuss the basic "conversational protocol," indicating that the "Frame calls ISP-like service,"

"authenticates to ISP," "ftp's to liveframedb.com," authentication of the server and frame, data transfers by "package" to the frame from the server, "checksums," and "unpacking contents of package":

Call/Connectivity:

- Basic "conversational protocol." (see other documents for more detail)
  - Frame calls ISP-like service
  - Frame authenticates to ISP, as part of ppp or after
  - Frame ftp's to liveframedb.com
  - Server authenticates frame
  - Frame ftp's file from server, and compares to expected contents. Server authenticated
  - Frame pushes metadata package, including log
  - Server compares to what it thinks the frame should have
  - Frame pulls package down
  - Checksums
  - Hang up and start unpacking contents of package.

330. The September 14, 1999 notes (Ceiva-A 00011264) indicate that PPP/IP configuration requires three pieces of information, including "the user ID for the ISP (frame serial number)" and "a password (possible determined algorithmically)":

PPP/IP

- Only three pieces of configuration information should be needed to dial. They are:
  - phone number
  - the user ID for the ISP (frame serial number)
  - a password (possible determined algorithmically)

331. The September 14, 1999 notes (Ceiva-A 00011265) indicate the basic FTP dialog would include the following exchanges:

FTP

- ftp needs to time out if server is unresponsive
- Frame set to passive for ftp connection.
- Example ftp dialogue:
  - Frame says… ftp ideagrovedb.com
  - Server responds…. Password?
  - Frame sends pword…. Xxxxxxxx
  - Server automagically places frame in its directory on server. Rest from frame perspective
  - ftp> set bin (?)
  - ftp> get [my authentication file]
  - frame compares to expected results, then trusts server
  - ftp> push [my metadata]
  - ftp> get [my package] server allows only if metadata jives with expectation on server
  - ftp> bye

332. The September 14, 1999 notes (Ceiva-A 00011266-67) indicate basic functions of the server include user registration and "password" requirements, web portal control over frame behavior characteristics, and frame authentication of the server:

Site or server:

Registration of liveframe.com community members

- Both owners and senders need to "register as a part of the liveframe community." This enables senders to send to multiple frames without a lot of hassle.
- Unique password is required for all registered in community.
- Frame owners may automatically be set up as friendly senders.
- Frames are registered to owners, and can have a many to one relationship

The Frame owner can…..

1) change preferences regarding their frame

- Frames will dial nightly for the first frames that are sold, but we will want to have the user select the dialing frequency on a later version of the software.
- Frame owner can request a 1 hour dialing window for their frame to use to dial in. Some sort of randomization then happens in that window to spread frames out over that time. Perhaps this is done by serial number, or some other smart mechanism from the database server. The overall dialing windows need to be coordinated with the wholesale Internet provider.
- Frequency of slide show is selected on site, and part of frame metadata. ("slide interval")
- Images are marked for slide show on site. Order of slide show is sent with image, as well as flag that indicates whether it's in the slide show or not.
- Background/matting information will be selected on the site in the future. The site will reduce the submitted pictures dimensions to be as large as possible in the 640x480 field, and fill the rest of the frame with matting.
- Grandma will have to call someone with Internet access to add to her "friendly sender" list, or change any characteristics of her frame, ie. All frame traits are changeable only through the web.

- Server is responsible for making sure that authentication file is in frame directory on ftp server. Frame will authenticate the server identity via a file that is ftp'd from the server to the frame, and compared to what frame expects find. Algorithm, or contents needs to be determined.
- The package to go out to the frame needs to be prepared immediately whenever it is changed by web site manipulation of a picture box (the frame may be force dialed right after the sender finishes)
- A later version of the database can have some pointer and "expire" functionality where you don't store multiple copies of images online. For now duplicate images can be stored for simplicity of design.
- JPG images have header information on them that is not compressed. The server can strip this header (historical) information off the images because the frame has no use for it.

333. A weekly status report from Doctor Design (Ceiva-A 00010126-29), dated September 16, 1999 indicates that the team worked on "completion of schematic capture and BOM," "mechanical design and board placement," "purchasing to start procurement for prototype builds," "JPEG implementation," and "software planning and partitioning."

334. Exhibit 3 to the 2013 Declaration ("DS Exhibit 3") is a compilation of notes from meetings that occurred September 10, 14, and 16, 1999 between Mr. Schiller and Mr. Yanover and engineers they hired to assist them in reducing their invention to practice that describe certain

aspects of the invention. The meeting notes describe how the system works from the frame perspective:

Basic Operational States of Frame:

I just got my new frame out of the box....

- User plugs phone and power into the wall
  - You should get a nice Intro screen, "Congratulations on your frame purchase"
  - Other pictures can start in slide show. Intro and other pictures are burned in during manufacture, and are the same for every frame. As in normal operation, the frame will show undithered jpeg's, while working to dither all images.
  - You can force dial it by holding down the button
  - If you don't force a dial, will it try to dial automatically after some time period?
  - The first time the frame dials the configuration 800 number
  - The configuration connection picks up local phone number from CallerID and the local dialing configuration information if there is any.
  - The frame hangs up after the config connection, then dials it's new local number.
  - A *Normal Connection* (see below)

The normal nighttime frame connect time....

- Clock tick and dial time variables are the same
- Frame does magic to unpack modem code, etc
- A *Normal Connection* (see below)
- If image content, or configuration changes, default back to slide show mode

335. The meeting notes also describe the network connection function between the frame device and server system, including an overview of the security and authentication handshake and connection steps:

A Normal Connection to mothership.com:

Dialing

- Basic function...
  - Frame knows time to dial
  - Picks up phone checks for dialtone
  - Dials number using tone
  - If still dialtone, dial number using pulse
  - Handshake from remote modem

PPP/IP

[Note: Here we will enlist an ISP engineer, so that we can have a crystal clear understanding about how information is exchanged on the connection set up.]

- Basic function....
  - Modems finish handshake and decide on 14.4 connection
  - PPP protocols start up
  - Authentication
  - IP info exchange finishes
- Only three pieces of configuration information should be needed to dial. They are:
  - phone number
  - the user ID for the ISP (frame serial number)
  - a password (possible determined algorithmically, though static is okay here)

IP address, default router, subnet mask, and name service information should all be drawn from

FTP

- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
    - Frame says…. ftp mothership.com
    - Frame sends…. User/FrameID
    - 302 Password required
    - Frame sends pword…. Xxxxxxxx (this password may be dynamically generated.

- Server automagically places frame in its directory on server. Assume frame always in bin mode, as is server. Rest from frame perspective
- ftp> get [my authentication file] (okay to hardcode the name, but contents dynamically assigned. How would we want to do this?)
- checksum
- frame compares to expected results, then trusts server
- ftp> put [my metadata] (assume all metadata transfers to server) (frame has to know how much data it is sending in this put to communicate with server at beginning of transfer)
- ftp> get [my package]
- checksum
- get [time package]
- ftp> bye

336. The notes go on to explain about the metadata maintained on the frame device and package formats for server authentication by the frame device, metadata from the frame device to the server, and bundle downloads from the server to the frame:

Metadata for frame:

By frame…..

- serial number, unique identifier for frame (aka frameID)
- tick count (relative clock) (sent to server via log? Or as separate field?)
- lights on clock tick?
- lights out clock tick?
- dial time (delta to tick count for next dial instruction)
- contents of phone number fields
- slide show interval (how fast to run slide show)
- auto-slide-show-enable flag so when content changes, slide show initiated
- Background flavor bit for matted pictures (future need)
- Software and Hardware version numbers

Package Formats:

- Package number one is authentication file from server to frame for verification of server
- Package number two is metadata file from frame to server
- Package number three is bundle of goods from server to frame
- Package number four is clock tick package from server to frame

337. Exhibit 4 to the 2013 Declaration ("DS Exhibit 4") is a description of data to be exchanged between a digital picture frame and a server system of the invention from a file on Mr. Schiller's computer dated September 16, 1999. For example, the connection data includes a phone number, connection method, user name, and password:

Connection Point Data

Phone number and asociated factoids for establishing a connection. For transmission this will be represented as an item count (possibly zero) followed by a factoid bundle for each item.

Each factoid bundle contains the following:

- Phone Number - 16 byte ASCII string zero terminated
- Connection Method -
- User name
- Password

338. The September 16, 1999, document ("DS Exhibit 4") also addresses details regarding history logs, picture lists, display lists for updating of content on the frame device, details on formats for transmission to the server, and details on data received from by the frame device from the server. DS Exhibit 4 at 2-4.

339. An email dated September 24, 1999 (Ceiva-A 00018742-50), attached meeting notes from September 21, 1999, detailing the development team's activities and assignments, including creation of the "Security schema/algorithm to use for ftp password, and authentication file," and "Creation of the 'package structures' including the two separate display lists (show list, image list)," (Ceiva-A 00018742), as well as work performed on "Basic Operational States of Frame" (Ceiva-A 00018744), "Normal Connection to mothership.com" (Ceiva-A 00018745-46),

"User Operations" (Ceiva-A 00018747), and "Other Stuff the Frame will be doing." (Ceiva-A 00018748).

340. A document entitled IG LiveFrame! Database Notes (Ceiva-A 00019232-38), printed on September 24, 1999, describes aspects of the user portal for uploading photos and controlling behavior characteristics of the frame device. Among other things, it contemplates a website allowing users to register themselves to "submit images to a frame," Ceiva-A 00019232, and website areas to "Send a Picture" or control "LiveFrame Settings." Ceiva-A 00019233. The registration requirements include the ability to "prompt a guest to sign in as a member," "auto-sign in a member based on finding a proper cookie," register to become a member, and "edit the member profile," including "name," "E-mail address," "password," and "rating for images browsed and received." Ceiva-A 00019235. By signing in as a member, a guest is able "to upload to our site an image file," and "add, replace or delete an image in one's collection," Ceiva-A 00019235, and for frames "owned and/or controlled as a parent" the ability to "edit the frame profile" to specify when "dial-ups should be done (local time)," "slide show interval," "lights out and lights on times," "maximum rating of images that will be downloaded," and the "order in which images" appear and play. Ceiva-A 00019237.

341. A document entitled Note on Frame Access Authentication (Ceiva-A 00018613-15), dated September 27, 1999, "describes in general terms how the authentication procedure between the remote user (Frame) and the home station (Base) will proceed," explaining that the "authentication procedure depends on the exchange of messages between Frame and Base under the FTP protocol," whereby the "Frame invariably initiates any dialog between itself and the Base," and then "receives a greeting message" and "responds with its Identification Message" and provides its device serial number and a checksum challenge text

using a secret algorithm." Ceiva-A 00018613-14. The Base "uses the checksum to verify that the serial number and challenge text have been received correctly," and then responds with "a specially coded response so that the Frame can be confident that the Base is genuine" and generates a "Password Required" message requiring the Frame to provide a challenge response using the checksum, which the Frame provides back to the Base in a "Password Message." Ceiva-A 00018614-15. If the password is validated by the Base, the Base then responds with a "logged in" message, at which point, the Frame "will begin GET/PUT data transactions." Ceiva-A 00018615.

342. Website printouts (Ceiva-A 00019216-31), dated October 8, 1999, show a prototype web portal for uploading images and controlling the behavior characteristics of the frame devices, including a member sign in by "username" and "password," Ceiva-A 00019216-18, a user interface for selectively controlling different frame devices, Ceiva-A 00019219, exemplary images available for display on each of the frame devices, Ceiva-A 00019222, and exemplary preference setting controls for the frame devices, Ceiva-A 00019223. An email (Ceiva-A 00019200) indicates that the "sample" website went live for testing on October 5, 1999. These pages corroborate actual reduction to practice of the web portal by October 5, 1999, and conception of those features and functions by at least September 16, 1999, as it would have taken some time to create and test the sample website.

343. A weekly status report from Doctor Design (Ceiva-A 00009927-29), dated October 17, 1999, indicates that the team worked on "the debug of the prototype hardware," testing the "path between the processor and DAA," and "PSOS was brought up on the prototype hardware and pictures."

344. An email (Ceiva-A 00011280), dated October 24, 1999, attaches drawings of the frame device component stack. The attachment Ceiva-A 00011282 is a schematic dated October 24, 1999, showing an exploded view of the frame device with a paper boarder region serving as a picture matt between the glass front and the LCD display.

345. A weekly status report from Doctor Design (Ceiva-A 00010116-18), dated October 24, 1999, indicates that the team worked on debugging "prototype hardware," purchasing for "the 10k build," integrating slide show functionality, and button functionality.

346. A weekly status report from Doctor Design (Ceiva-A 00010111-14), dated October 29, 1999, indicates that the team worked on a "demonstration unit" that was "built and delivered" on October 25, 1999, continued work on "the purchase of components for the 10k build," updates of the mechanical design, debugging and integration of the modem code and communication code, and finishing work on other software design tasks.

347. A weekly status report from Doctor Design (Ceiva-A 00010107-09), dated November 13, 1999, indicates that the team worked on completion of "testing of the DNS and IPCP additions," "communications code was integrated with UI code," "modem and DAA interface was integrated with pSOS," additional test boards were assembled, and final purchasing "for the 10k build."

348. A weekly status report from Doctor Design (Ceiva-A 00009921-25), dated November 23, 1999, indicates that the team worked on software integration "in time for the 12/6/99 release of 10 units to the press," "to prepare the test plan and aid in testing and task completion," "final regulatory testing," and "Rev C boards were released to Xerox for the 10k build."

349. A weekly status report from Doctor Design (Ceiva-A 00009935-38), dated December 4, 1999, indicates that the team worked on "integration and test of the software … in

time for the 12/13/99 release of 50 units to the press," UL testing, FCC testing, and preparation for initial commercial production.

A. The *Inter Partes* Reexamination

350. In the 2013 Declaration, Mr. Schiller demonstrates conception of the inventions as claimed in then pending independent claims 1 and 18 and dependent claims 2, 3, 7 and 19 by at least September 16, 1999, followed by reasonably continuous work and diligence through the constructive reduction to practice of the inventions by filing of the patent application for the '573 Patent on December 10, 1999.

351. It is my understanding, from speaking to Mr. Schiller and Mr. Yanover, that the invention claimed in the '573 Patent, as well as the separate inventions claimed in the '930 and '562 Patents, were made by Mr. Schiller and Mr. Yanover during the development of the world's first internet connected digital picture frame, the Ceiva frame, which was released as a commercial product, with Amazon as the exclusive launch retailer, in March of 2000.

352. According to Mr. Schiller, he and Mr. Yanover conceived of the eventually patented features of the Ceiva frame in July 1999 (at that time referred to by them as the "Live Frame" digital picture frame) and memorialized them in a document titled *Executive Summary* dated July 11, 1999. DS Exhibit 1. From the outset, Mr. Schiller and Mr. Yanover intended their device to look like a traditional picture frame used to display printed photos. This is corroborated in the July 11, 1999, *Executive Summary* stating:

Imagine a picture frame that has the ability to load its own pictures directly from the Internet. With nothing more than a power cord and a telephone connection, the LiveFrame comes to life. In fact, the LiveFrame looks, feels and acts like any traditional picture frame, with one exception -- its high resolution state-of-the-art digital screen promises up to date pictures on demand, anytime, anywhere.

And that's just the beginning, because at LiveFrame.COM, our users have the ability to customize their frame to expand it beyond just family photos -- from weather reports, art collections, greeting cards, movie posters, post cards, live cameras and comics, LiveFrame.COM provides a vast array of LiveChannels each ready to automatically update picture frames around the world.

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353. The inventors conceived of an embodiment sizing the display screen of the digital picture frame such that it could fit into a traditional picture frame—it actually used a traditional picture frame to circumscribe the digital picture frame's LCD display panel, as reflected in and corroborated by the July 11, 1999, *Executive Summary*:

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display
- Onboard software control to allow automatic startup and "find home" capability
- Offboard power supply and onboard power transform
- Custom designed backlighting system using either cold cathode, LED, incandescent, etc..
- Custom designed picture enclosure with ability to fit into a standard traditional picture frame, thus requiring no special injection molded put packaging

354. Shortly after conceiving of the features set forth in the *Executive Summary*, Mr. Schiller and Mr. Yanover engaged with fabricators and suppliers to provide parts and services to allow them to produce the internet connected digital picture frame as an actual consumer product.

355. The *Architecture Study* dated August 12, 1999 (DS Exhibit 2) describes aspects of the invention as specified by Mr. Schiller and Mr. Yanover to Doctor Design, the company they hired to make a prototype digital picture frame according to their specifications. The first line of

the *Architecture Study* indicates that the LCD display screen and associated control electronics would mount in a standard picture frame, thereby inherently having a border region that not only resembles, but actually is, a traditional picture frame:

Doctor Design
An Integrated Systems Company

Architecture Study

Prepared for

Dean Schiller/Paul Yanover

Proposal Date: August 12, 1999

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

356. The concept of using a traditional picture frame to circumscribe the electronic display screen is reflected as an embodiment disclosed in the specification of the ’573 Patent describing a border region modeled to resemble a traditional picture frame:

7

to the wishes of the user. Each frame device has a display region (e.g. an LCD) surrounded by a border region modeled to resemble a traditional picture frame. The border region may be comprised of wood, plastic, or any other aesthetically pleasing compound. The border region may be, for example, an actual picture frame with a paper matte board that surrounds a thin LCD display region. Each frame device

357. I understand that the patent examiner during the reexamination of the ’573 Patent stated that the exhibits attached to the 2013 Declaration failed to demonstrate by September 16, 1999, “the conception of ‘at least one frame device comprising a border region modeled to circumscribe printed photographs.”

358. As discussed above, however, there is substantial corroborating evidence showing that the inventors conceived that their device would "look[] . . . like any traditional picture frame" and would use an actual picture frame as the border region surrounding the LCD screen. The examiner likely missed this evidence because the declaration did not focus on that particular feature or highlight the corroborating evidence cited above, but merely stated:

> A digital picture frame/frame device (which we sometimes referred to as a "LiveFrame," and also as the "Magic" project) that resembles a traditional picture frame is disclosed, for example, in Exhibit 1, page 2, second paragraph from the bottom. Accordingly, Exhibit 1 establishes and corroborates that we had conceived of this claim element at least as early as the date of Exhibit 1, namely July 11, 1999.

2013 Declaration at 3.

B. The Asserted Claims

359. The 2013 Declaration concerned only the claims of the '573 Patent that were pending at the time of the 2013 Declaration and did not address the currently Asserted Claims of the '573, '930, and '562 Patents. However, in my opinion, the statements in and exhibits to his 2013 Declaration, as well as other evidence discussed herein, support and corroborate that Mr. Schiller and Mr. Yanover conceived of the inventions of each of the Asserted Claims of the '573, '930, and '562 Patents by at least September 16, 1999, and reasonably continuous activity and diligence to constructively reduce them to practice through the filing of the '573 Patent application on December 10, 1999. In the discussion below, I address various elements of the Asserted Claims regarding conception and reduction to practice.

1. The '573 Patent

360. The Asserted Claims of the '573 Patent are claims 2, 6, and 19. Claim 6, which is a dependent claim of original claim 1, was not subject to reexamination of the '573 Patent. It therefore remains in its originally issued form, including all of the limitations of original claim 1 as well as the limitations recited in claim 6 itself. Claim 19 was added during the reexamination.

361. Original claim 1, which is the base claim for claim 6, and claim 2, as amended, share many claim elements. To avoid unnecessary duplication, I will address claims 1, 2 and 6 together, pointing out differences as appropriate.

362. The preamble of original claim 1 and amended claim 2 states "*A system for distributing image data comprising*." Mr. Schiller and Mr. Yanover's conception of a system for distributing image data is documented throughout the *Executive Summary* of DS Exhibit 1. The following excerpt is one example:

What is LiveFrame.COM all about?

From home to office, across the country and across the world, virtually everyone has collections of picture frames capturing memories of family and friends. And of course with many picture frames, comes the process of keeping pictures up to date – it is an impossibly difficult task that invariably results in the familiar question, "Do you have any recent photos of the kids? ...the grandkids? ...your trip to DisneyWorld?"

Imagine a picture frame that has the ability to load its own pictures directly from the Internet. With nothing more than a power cord and a telephone connection, the LiveFrame comes to life. In fact, the LiveFrame looks, feels and acts like any traditional picture frame, with one exception -- its high resolution state-of-the-art digital screen promises up to date pictures on demand, anytime, anywhere.

And that's just the beginning, because at LiveFrame.COM, our users have the ability to customize their frame to expand it beyond just family photos -- from weather reports, art collections, greeting cards, movie posters, post cards, live cameras and comics, LiveFrame.COM provides a vast array of LiveChannels each ready to automatically update picture frames around the world.

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Ceiva-A 00003843

Jul 15 99 09:33a Carolyn Prousky 323-656-8049 p.4

*Live*frame.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

363. The first part of the first claim element of claim 1 as originally issued and of claim 2 as amended is *"at least one frame device."* The specification of the '573 Patent states:

SUMMARY OF THE INVENTION

A method and apparatus for distributing picture mail to a frame device community is described. The present invention comprises one or more interconnected frame devices. A frame device is a self-configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric (e.g. a computer network). If a person (referred to as a user) wants to display

364. Mr. Schiller and Mr. Yanover's conception of the claimed "frame device" (namely a self-configuring digital picture frame that obtains images from a repository that can be accessed by a computer network, such as the internet) is documented, for example, in the *Architecture Study* of Exhibit 2 and the *Executive Summary* of DS Exhibit 1. For example, the first line of page 2 of the *Architecture Study* states that their digital picture frame is self-configuring:

Dean Schiller/Paul Yanover

11. Device should self-initialized out of the box by calling a pre-programmed 800 number to obtain set up and control information.

365. That their digital picture frame obtains images for display from a repository that can be accessed by a computer network such as the internet is described throughout the *Executive Summary*, including in the "Glossary" on page 8 of the *Executive Summary*:

Glossary

LiveFrame.COM – An Internet destination providing the registration, management picture distribution and content channeling for the LiveFrame picture frame network.

LiveFrame picture frame – An electronic picture frame that provides the automatic distribution and receipt of pictures directly from the Internet using the LiveFrame.COM system.

PictureBox – An online repository of digital pictures stored under a registered LiveFrame user and associated to an individual or set of LiveFrame picture frames.

LiveChannel – An online content distribution system used to provide customized broadcast of digital pictures to a network of registered LiveFrame picture frames.

LiveTools – A set of online digital tools used to author customized digital pictures or enhance existing digital pictures in conjunction with the LiveFrame.COM picture frame network.

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366. The second part of the first element of original claim 1 is that the claimed frame device is *"configured to operate according to preferences defined by a user."* The second part of the first element of amended claim 2 is slightly different, adding that the preferences defined by a user comprises an "*image display list*." The specification of the '573 Patent states:

> Once the picture box is obtained, step **813** executes, at step **813** the behavior characteristics of the frame device is determined. The behavior characteristics may be established by default or customized according to the user's preferences. When the behavior characteristics are determined, step **815** executes. At step **815**, the invention contemplates loading the behavior characteristics into the data repository for use by the frame device.

> Users may use the picture box to customize the behavior characteristics associated with each frame device **200–209**. Specifying the time and type of image data **214** frame device **200** is to obtain is an example of a customizable behavior characteristic. However, any feature and/or function offered by the frame devices **200–209** may become a behavior characteristic.

367. The "preferences defined by a user" relate to "behavior characteristics" of the frame device, and "any feature and/or function offered by the frame devices" may be a behavior characteristic. Mr. Schiller and Mr. Yanover's conception of a frame device (i.e., a digital picture frame) that operates according to preferences/configurations/settings for frame functions/characteristics that may be defined by a user is corroborated, for example, in the *Executive* Summary of DS Exhibit 1. Some of these user preferences are described, for example, on page 3 of the *Executive Summary*:

*Live*frame.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

First, each LiveFrame picture frame is labeled with its own unique identification number. Upon startup, the user goes to LiveFrame.COM to register the frame and assign it a unique username – perhaps paul@liveframe.com. Like an email mailbox, we create a LiveFrame **PictureBox**, a place to store online pictures that will be downloaded to the LiveFrame picture frame. Additionally, users indicate the LiveFrame picture frame configurations. They are simple:

1. Where is this frame?
   - Indicated by Country and Postal Code, **e.g. USA, 90046**
     (This location information will be used to select a local access telephone number)

2. When does this frame want to get updates?
   - Indicated by frequency and time of day, **e.g. Every Sunday at 3:00am PST**

For the example above, we have created a LiveFrame picture frame account for a frame in California, USA, 90046 under the username paul@liveframe.com. It will automatically dial into the Internet using a local number each Sunday night at 3:00am PST to download the pictures from its registered online PictureBox.

Depending on the user's preferences, they can decide to subscribe their frame to any one of a number of active **LiveChannels** that automatically send pictures to the registered PictureBox. So, for example, we may chose to subscribe to the "Disney LiveChannel" and each week receive a new picture from Disney's Tarzan. Or perhaps we may chose to subscribe to the "Hubble LiveChannel" and each week receive a new view of outer space as seen from the Hubble Telescope.

368. Another example of disclosure of user preferences is on page 6 of the *Executive Summary*:

2. LiveFrame.COM

The LiveFrame.COM website consists of five principle technologies; a custom designed frame registration, configuration, connection, scheduling and picture handling system. The main functional components of the site are:

- **Registration** – an online picture frame registration system that allows user to register unique picture frame identifiers to a user defined account. An online database will handle the frame to username transformations and allow for multiple frames to associate to single username accounts.

- **Configuration** – an online scheduling system that allows users to specifically designate frame characteristics including download times, download frequency, geographic location (for telecom handling)

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369. With respect to amended claim 2, a preference comprising an image display list is disclosed on Pages 3 and 4 of DS Exhibit 4 (designated pages C1111 and C1112), which show that the "Data Received from the Server" from the server in response to the frame's "ftp>get[my package]" request includes an image display list ("Display List"):

Data Received from the Server

Datum Name		Description
Redacted		
soft_rev	Re-dac-ted	ASCII software revision string
frame_loc		Frame Location
cur_time		Frames idea of current GMT time.
cb_time		Seconds untill next callback.
off_time		Seconds untill back light off.
on_time		Seconds untill back light turns on.
global_flags		System wide flag settings.
slide_delay		Inter slide delay in seconds.
Connection Point Data		
n_connect	Red.	Number of connection entries to follow
Each group of 5 entries comprises the data for one connection. There will be n_connect of them in the data stream.		
phone_num	Re-dac-ted	Ascii string containing phone number
con_method		What type of connect do we do
username		Ascii string containing user name
passwd		Ascii string containing password
Redacted		
Picture List		
n_pict	Red.	Number of picture entries to follow
The following group of two entries will be repeated n_pict times in the data stream		
pict_id	Redac-ted	Unique code to identify the picture.
pict_flags		Settings for the picture.
Display List		
disp_count	Red.	Number of display entries to follow
There will be disp_count of the following in the data stream.		
pict_id	Red.	Unique code to identify the picture.
Picture Data		
n_pictures		Number of pictures to follow
The following will be repeated for each picture.		
pict_id	Re-dac-ted	ID for following picture
comp_len		Length of compressed data in bytes including pad data.
jfif_data	comp_len bytes of data. Padded to mod 4 boundary	

370. The second element of original claim 1 and amended claim 2 is "said at least one frame device comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs." I have already discussed the corroboration in the exhibits to the 2013 Declaration for this claim element in paragraphs 352 to 358 above.

371. The third element of original claim 1 and amended claim 2 is "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system." As described in the '573 Patent specification, the "user interface" may be in the form of a website:

> FIG. **5** shows an illustration of a picture box viewer containing a picture box. In one or more embodiments of the invention, picture box viewer **500** is a web browser configured to display picture box **523** (e.g. a web page). Examples of several widely used web browsers include Netscape Navigator, Internet Explorer, and Opera. However, picture box viewer **500** may be any type of software program configured to display picture box **523**. Picture box **523** is any type of data file cable of being transmitted to picture box viewer **523** for display. For example, files written using the HyperText Markup Language (HTML), the JavaScript programming language, the ActiveX programming language, or the Portable Document Format (PDF) may be displayed using. picture box viewer **523**. It is also possible to generate picture box **523** using various other types of languages such as Standard Generalized Markup Language, (SGML) or extensible Markup Language (XML).
>
> Picture box **523** is any example of the type of interface that may be used to create and/or modify records in the data repository. The information stored in the data repository may

372. An example of a user interface as claimed in claim 1 in the form of a website is described, for example, on pages 6-7 of the *Executive Summary* of DS Exhibit 1 under the heading "2. LiveFrame.com":

2. LiveFrame.COM

The LiveFrame.COM website consists of five principle technologies; a custom designed frame registration, configuration, connection, scheduling and picture handling system. The main functional components of the site are:

- **Registration** – an online picture frame registration system that allows user to register unique picture frame identifiers to a user defined account. An online database will handle the frame to username transformations and allow for multiple frames to associate to single username accounts.
- **Configuration** – an online scheduling system that allows users to specifically designate frame characteristics including download times, download frequency, geographic location (for telecom handling)

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Jul 15 99 09:37a Carolyn Prousky 323-656-8049 p.8

*Live*frame.COM

- **Connection** - a telecommunications connection protocol to handle frame call in, identification and verification, security, error handling and transport of picture data from the online picture database to the network of registered frames.
- **Scheduling** – a scheduling system designed to allow users to manage picture frame content including folder management, marking pictures for deletion, marking pictures to be saved, subscribing to LiveChannels (discussed below) and management of user picture accounts.
- **Picture Handling** - A picture handling system that allows for picture data to be received via email to LiveFrame.COM and processed by username and password to PictureBox accounts. As well, a system that facilitates the transport of pictures from the online database to the network of registered frames.

373. As described in the *Executive Summary*, the "LiveFrame.com" website allows users who access the website via the internet using a web browser to "designate frame characteristics" (i.e., "preferences") and to send images ("Picture Handling"), which are stored by the LiveFrame.com web server.

374. The fourth element of original claim 1 and amended claim 2 is *"said at least one server system coupled to said at least one frame device via said network."* The *Executive Summary*

of DS Exhibit 1 discloses that the "LiveFrame" picture frame is coupled to the "LiveFrame.com" web server via a network such as the internet, as shown in excerpts below from pages 1, 7, and 8 of DS Exhibit 1:

Jul 15 99 09:33a Carolyn Prousky 323-656-8049 p.4

Liveframe.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

Jul 15 99 09:37a Carolyn Prousky 323-656-8049 p.8

Liveframe.COM

- **Connection** - a telecommunications connection protocol to handle frame call in, identification and verification, security, error handling and transport of picture data from the online picture database to the network of registered frames.

Other Issues & Notes

- This system will require a unique setup with an ISP or other large telecom provider to handle incoming calls from the network of registered frames.
- The system will run largely at off hours utilizing what will be mostly unused bandwidth from the ISP or telecom provider
- The picture data is very small in size and the time to download has no tight performance criteria, so we can accept slow connections and thus meet with many situations and still be successful.
- All traffic through the LiveFrame picture frame network is routed through the LiveFrame.COM Internet location – that is, the individual LiveFrame picture frames call LiveFrame.COM directly.

375. The fifth and last element of original claim 1 is "wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data." The fifth element of amended claim 2 adds the element of "package data," stating that the

server system "is configured to generate package data comprising said image data and preferences and to periodically relay said package data comprising said image data and said preferences to said at least one frame device when and in response to said at least one frame device automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences."

376. Corroboration that Mr. Schiller and Mr. Yanover had conceived of this claim element at least as early as September 16, 1999 is found, for example, in DS Exhibits 1, 3 and 4. The Executive Summary of DS Exhibit 1 describes how the "LiveFrame" picture frame periodically and automatically initiates communication with and sends requests to the server for image data, as shown in the excerpt below from page 3 stating "Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet, and downloads pictures to its screen.":

Jul 15 99 09:33a Carolyn Prousky 323-656-8049 p.4

*Live*frame.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

377. Pages 2-3 of DS Exhibit 3 show an example of a normal periodic connection of the frame device to the server system (referred to in DS Exhibit 3 as "mothership.com") that includes making a dial-up connection to the internet and then issuing an FTP request for image data to the server system. As shown on page 3 of DS Exhibit 3, the frame makes a request for image data in the form of an FTP "get" command to get a package of data ("ftp>get[my package]"):

FTP

- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says.... ftp mothership.com
  - Frame sends... User/FrameID
  - 302 Password required
  - Frame sends pword.... Xxxxxxxx (this password may be dynamically generated. How would we want to do it, if it is dynamic?) (we own ftpd on server)

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  - Server automagically places frame in its directory on server. Assume frame always in bin mode, as is server. Rest from frame perspective
  - ftp> get [my authentication file] (okay to hardcode the name, but contents dynamically assigned. How would we want to do this?)
  - checksum
  - frame compares to expected results, then trusts server
  - ftp> put [my metadata] (assume all metadata transfers to server) (frame has to know how much data it is sending in this put to communicate with server at beginning of transfer)
  - ftp> get [my package]

378. Pages 3 and 4 of DS Exhibit 4 (designated pages C1111 and C1112) show the "Data Received from the Server" from the server in response to the frame's "ftp>get[my package]" request:

Data Received from the Server

379. As shown on page C1112, the data package relayed by the server to the frame includes preferences such as "Frame Location," "Seconds until next callback," "Seconds until back light on," "Inter slide delay in seconds," "Settings for the picture," an image "Display List," as well as image data ("Picture Data"):

Datum Name		Description
	Redacted	
soft_rev	Re-dac-ted	ASCII software revision string
frame_loc		Frame Location
cur_time		Frames idea of current GMT time.
cb_time		Seconds untill next callback.
off_time		Seconds untill back light off.
on_time		Seconds untill back light turns on.
global_flags		System wide flag settings.
slide_delay		Inter slide delay in seconds.
	Connection Point Data	
n_connect	Red.	Number of connection entries to follow
Each group of 5 entries comprises the data for one connection. There will be n_connect of them in the data stream.		
phone_num	Re-dac-ted	Ascii string containing phone number
con_method		What type of connect do we do
username		Ascii string containing user name
passwd		Ascii string containing password
Redacted		
	Picture List	
n_pict	Red.	Number of picture entries to follow
The following group of two entries will be repeated n_pict times in the data stream		
pict_id	Redac-ted	Unique code to identify the picture.
pict_flags		Settings for the picture.
	Display List	
disp_count	Red.	Number of display entries to follow
There will be disp_count of the following in the data stream.		
pict_id	Red.	Unique code to identify the picture.
	Picture Data	
n_pictures		Number of pictures to follow
The following will be repeated for each picture.		
pict_id	Re-dac-ted	ID for following picture
comp_len		Length of compressed data in bytes including pad data.
jfif_data	comp_len bytes of data. Padded to mod 4 boundary	

Last modified: Thu Sep 16 15:04:48 Pacific Daylight Time 1999

380. Amended claim 2 includes the following additional element, not found in claim 1: "wherein said at least one frame device is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in memory of said frame device."

381. Mr. Schiller and Mr. Yanover's conception of this additional claim element is corroborated, for example, in the following excerpts from DS Exhibit 3, which describe exchanges of communications between the digital picture frame and server system during which the digital picture frame compares a "checksum" performed on authentication information received from the server system to "expected results" before "trusting" the server system and receiving image data ("my package") from the server system. Authentication of the server by the frame prior to obtaining and storing the image data and preferences from current package data is disclosed, for example, on page 3 of DS Exhibit 3 (designated "C130") which describes the following actions performed by the frame:

- ftp> get [*my authentication file*] (okay to hardcode the name, but contents dynamically assigned. How would we want to do this?)
- checksum
- frame compares to expected results, *then trusts server*

382. The exchange of package data between the server and the frame is also disclosed under the heading "Package Formats" on page 6 (C 0133) of DS Exhibit 3, which lists the following package exchange:

- Package number one is authentication file from server to frame for verification of server.
- Package number two is metadata file from frame to server.
- Package number three is bundle of goods from server to frame.
- Package number four is clock tick package from server to frame.

383. The above sequence of package exchanges shows that it is only after the frame receives the "authentication file from server to frame for verification of server" that the frame receives the package data comprising the image data and preferences ("bundle of goods from server to frame").

FTP

- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says… ftp mothership.com
  - Frame sends… User/FrameID
  - 302 Password required
  - Frame sends pword…. Xxxxxxxx (this password may be dynamically generated. How would we want to do it, if it is dynamic?) (we own ftpd on server)

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- Server automagically places frame in its directory on server. Assume frame always in bin mode, as is server. Rest from frame perspective
- ftp> get [my authentication file] (okay to hardcode the name, but contents dynamically assigned. How would we want to do this?)
- checksum
- frame compares to expected results, then trusts server
- ftp> put [my metadata] (assume all metadata transfers to server) (frame has to know how much data it is sending in this put to communicate with server at beginning of transfer)
- ftp> get [my package]

Package Formats:

- Package number one is authentication file from server to frame for verification of server
- Package number two is metadata file from frame to server
- Package number three is bundle of goods from server to frame
- Package number four is clock tick package from server to frame

384. The following excerpts from pages 3 and 4 of DS Exhibit 4 confirm that the package data received from the server system ("my package") includes image data and preferences including an image display list:

Data Received from the Server

Picture List		
n_pict	Red.	Number of picture entries to follow
The following group of two entries will be repeated n_pict times in the data stream		
pict_id	Redac-ted	Unique code to identify the picture.
pict_flags		Settings for the picture.
Display List		
disp_count	Red.	Number of display entries to follow
There will be disp_count of the following in the data stream.		
pict_id	Red.	Unique code to identify the picture.
Picture Data		
n_pictures		Number of pictures to follow
The following will be repeated for each picture.		
pict_id	Re-dac-ted	ID for following picture
comp_len		Length of compressed data in bytes including pad data.
jfif_data	comp_len bytes of data. Padded to mod 4 boundary	

385. Claim 6 adds the following element to the elements of original claim 1: "The system of claim 1 wherein input to said user interface is permitted when said user is authenticated by said at least one server system." Mr. Schiller and Mr. Yanover's conception of this claim element is corroborated, for example, by the Executive Summary, which indicates in the description of the "Picture Handling" on page 7 that access to the "PictureBox accounts" (the user interface) is by "username and password":

***Live*frame.COM**

- **Connection** - a telecommunications connection protocol to handle frame call in, identification and verification, security, error handling and transport of picture data from the online picture database to the network of registered frames.
- **Scheduling** – a scheduling system designed to allow users to manage picture frame content including folder management, marking pictures for deletion, marking pictures to be saved, subscribing to LiveChannels (discussed below) and management of user picture accounts.
- **Picture Handling** - A picture handling system that allows for picture data to be received via email to LiveFrame.COM and processed by username and password to PictureBox accounts. As well, a system that facilitates the transport of pictures from the online database to the network of registered frames.

386. The passage above indicates that a username and password are required for a user to access the "PictureBox" user interface associated with a particular digital picture frame, as

confirmed in a separate passage describing registration of a digital picture frame and creation of a "PictureBox" user interface for the frame on page 3 of the *Executive Summary*, where a "unique username" is assigned to the PictureBox account:

Liveframe.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

First, each LiveFrame picture frame is labeled with its own unique identification number. Upon startup, the user goes to LiveFrame.COM to register the frame and assign it a unique username – perhaps paul@liveframe.com. Like an email mailbox, we create a LiveFrame **PictureBox**, a place to store online pictures that will be downloaded to the LiveFrame picture frame. Additionally, users indicate the LiveFrame picture frame configurations. They are simple:

387. Claim 19 was added as a new independent claim during the reexamination of the '573 Patent. One of the differences between claim 19 and claims 1 and 6 discussed above is that claim 19 recites a "digital picture frame" instead of a "frame device." However, as discussed in paragraph 363 above, a "frame device" is a type of "digital picture frame" (namely a self-configuring digital picture frame), so each of the portions of the exhibits that corroborate Mr. Schiller and Mr. Yanover's conception of the "frame device" of claims 1 and 6 also corroborate their conception of the "digital picture frame" recited in claim 19.

388. The preamble of claim 19 states "*A system for distributing image data comprising*." The preamble of claim 19 is the same as the preamble for claim 1, and Mr. Schiller and Mr. Yanover's conception of this claim element is corroborated as set forth in paragraph 362 above.

389. The first part of the first claim element of claim 19 is *"at least one digital picture frame."* As discussed above, the "frame device" of claims 1 and 6 is an example of a "digital picture frame." Accordingly, Mr. Schiller and Mr. Yanover's conception of this claim element is corroborated as set forth in paragraphs 363 to 365 above.

390. The second part of the first claim element of claim 19 is "*comprising memory and operating system software located inside said digital picture frame*." That Mr. Schiller and Mr. Yanover conceived of memory and operating system software located inside their digital picture frame is corroborated, for example, in the description of the "LiveFrame picture frame" on page 6 of the *Executive Summary* of DS Exhibit 1 and in the "Analysis of Requirements and Design Goals" section on page 2 of the *Architecture Study* of DS Exhibit 2:

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display
- Onboard software control to allow automatic startup and "find home" capability
- Offboard power supply and onboard power transform
- Custom designed backlighting system using either cold cathode, LED, incandescent, etc..
- Custom designed picture enclosure with ability to fit into a standard traditional picture frame, thus requiring no special injection molded put packaging

ANALYSYS OF REQUIREMENTS & DESIGN GOALS

1. Unit cost under $100 can not be met in the near future due to high costs of color displays. The lowest cost found for a quarter screen VGA (320 by 240) 5.5 inch diagonal is estimated to be $80 in very high volumes. A possible lower cost ($60) NTSC display is used in the Game Boy. This might be an option for a smaller size version of the device but an NTSC interface to the device requires a slightly more expensive LCD controller circuit and in general NTSC displays cost more than a comparable standard LCD. The preferred 7.7 inch display from Sharp is priced above $100.
2. Time to market has impacts on the product design. Using a processor that pSOS has been ported to will save design time since the software application can make use of TCP/IP and PPP code that has already been tested and is working. Cost impact of this decision is a combination of the expected $.50 royalty and any processor price increase. Although a custom ASIC is a preferred design choice because of cost, this can not be chosen for an initial product release due to the long lead design time. The long term goal of a custom ASIC also influences the processor selection.
3. Device simplicity was used in determining what parts and options were picked for the design. While the application and software used in the unit may be fairly sophisticated, the user interface is very basic with only a single button for control. Plug the unit in and it starts working.
4. The packaging, control and set up of the device determine how the User will view the function of the device.
5. The only optional features noted are a photo detector to turn off the display at night, or user control of the display contrast. A photo detector is expected to add $1 to the cost of the product. Our recommendation would be to use time control through the processor to control the display on/off or dim function. The Sharp demonstration unit did not have an adjustable contrast control. They recommend using a fixed contrast level. A potentiometer may be needed on the PCB so that contrast can be adjusted during manufacturing to offset LCD display differences. Software control of contrast could be added but the selected processor has only one Pulse Width Modulator (PWM) output, which will be used to control the backlight. Adding contrast control would increase the product cost.
6. The proposed device only contains two connections.
7. The proposed device would be able to store compressed images in 512 Kbytes of flash. The software is stored compressed in the other 512K bytes of flash and then uncompressed and transferred to dram during device initialization. Two Mbytes of Dram are used rather than an additional Mbyte of flash since Dram is $1/Mb versus $4.50/Mb for Flash.
8. Flash storage would retain the pictures and control information when the device is not powered.

391. The acronym "pSOS" in paragraph 2 in the above excerpt from the *Architecture Study* stands for "Portable Software On Silicon," an operating system available at the time from a company called Integrated Systems, Inc. See, for example, https://en.wikipedia.org/wiki/PSOS_(real-time_operating_system).

392. The last part of the first element of claim 19 is that the claimed digital picture frame device is *"configured to operate according to preferences defined by a user."* The last part of the first element of claim 19 is the same as the last part of the first element of claim 1, and Mr. Schiller

and Mr. Yanover's conception of this claim element is corroborated as set forth in paragraphs 366 to 369 above.

393. The second element of claim 19 is "said at least one digital picture frame comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs." I have already extensively discussed the corroboration in the exhibits to the 2013 Declaration for this claim element in paragraphs 352 to 358 above.

394. The third element of claim 19 is "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one digital picture frame and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system." The third element of claim 19 is the same as the third element of claim 1, and Mr. Schiller and Mr. Yanover's conception of this claim element is corroborated as set forth in paragraphs 371 to 373 above.

395. The fourth element of claim 19 is "*said at least one server system coupled to said at least one digital picture frame via said network.*" The fourth element of claim 19 is the same as the fourth element of claim 1, and Mr. Schiller and Mr. Yanover's conception of this claim element is corroborated as set forth in paragraph 374 above.

396. The fifth element of claim 19 is "wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one digital picture frame when said at least one digital picture frame automatically issues a request for said image data." The fifth element of claim 19 is the same as the fifth element of claim 1, and Mr. Schiller and Mr. Yanover's conception of this claim element is corroborated as set forth in paragraphs 375 to 379 above.

397. The last element of claim 19 is "and wherein said at least one digital picture frame is configured to obtain an update for said operating system software from said at least one server system." This element is described in the specification of the '573 Patent, for example, in the following excerpts:

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specified by the server without requiring any input from the user of the device. Thus, the frame device is self-configuring and self-maintained. If certain information necessary for normal day-to-day operation is lost (e.g. by a power outage or by the user physically moving the frame device), the frame device may recover without requiring input from the user.

Self-Upgrading Without User Input

The software that provides the frame device with its operational logic may be automatically updated and/or upgraded without input from the user. For example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device. The functionality of the pushbutton switch or behavior characteristics of the frame device, for example, may be altered by updating the onboard software that controls the device. Transmitting an update to the frame device may modify any characteristic that may be controlled via onboard software.

In one or more embodiments of the invention, flash memory **309** is configured to store the software release number and/or version number of the onboard software. When a connection to the data repository occurs the version of software held resident in flash memory **309** is compared to the version held in the repository. If the version of software held in flash memory **309** is older than the version in the data repository then a newer version is loaded into flash memory **309**. Thus, the frame device is configured to automatically update its software without requiring input from the user. DRAM **307** provides the frame device with an

398. Accordingly, an operating system update as recited in this claim element means an update that "may modify any characteristic that may be controlled via onboard software." Further, in the described embodiment, the digital picture frame receives a current version number of the onboard software from the server system and compares it to the version number it has stored in its

memory. If the revision number from the server is newer than the one in the digital picture frame's memory, the digital picture frame downloads the newer version and loads it into flash memory. Mr. Schiller and Mr. Yanover's conception of this claim element is corroborated, for example, by the following excerpts from the DS Exhibits 2-4. For example, the *Architecture Study* of DS Exhibit 2 discloses that a "basic function" of the device is to "periodically retrieve display content and updated control information from a server database," that one of the specific design criteria was for the device to "support remote program upgrades," and that remote "downloads of program information" were supported:

Doctor Design
An Integrated Systems Company

Architecture Study

Prepared for

Dean Schiller/Paul Yanover

Proposal Date: August 12, 1999

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

Dean Schiller/Paul Yanover

11. Device should self-initialized out of the box by calling a pre-programmed 800 number to obtain set up and control information.
12. Device should have an auto-dim feature.
13. Device packaging should be as simple as possible and be able to be packaged into at least 6 different frame types.
14. Devices phone connection should not interfere with user calls on the same telephone line.
15. Device should support remote program upgrades.
16. Future version of the device should support Ethernet access.

7. The proposed device would be able to store compressed images in 512 Kbytes of flash. The software is stored compressed in the other 512K bytes of flash and then uncompressed and transferred to dram during device initialization. Two Mbytes of Dram are used rather than an additional Mbyte of flash since Dram is $1/Mb versus $4.50/Mb for Flash.

15. Remote downloads of program information will be supported in the device application. This same scheme could be used for initial unit setup at the manufacturer.

399. The above excerpts corroborate that Mr. Schiller and Mr. Yanover had before September 16, 1999, conceived of the feature that their digital picture frame would download operating system updates from the server system, store the software in flash memory in compressed form, and then uncompress the software and transfer to dram when the device initializes (i.e., starts and restarts).

400. The following excerpts from DS Exhibits 3 and 4 provide further corroboration of the concept that the device would download "a new software upgrade available from mothership.com:"

When I hit a button during lights out, what happens?

- The frame goes to lights on mode for some period of time.
- If you were in slide show, you can hit the button again to come out of slide show

How can I change the brightness of my frame?

- There is a dimming pushbutton on the side. When you hold this button down, frames cycles up and down in brightness. You release the button to accept the current brightness level.

I've had my frame for awhile, and power to the frame was lost

- Power comes back up. Clock continues to click from last flash writing time
- Dialing occurs as normal at next apparent schedule.

How can I tell if my frame connected last night?

- If you manually advance your frame to the "11th picture" you will either see a note about last connection, or you will see an error pattern. (flesh out error pattern explanation)

There is a new software upgrade available from mothership.com… how does that work?

-

401. The fact that the inventors intended to have an FAQ section explaining to users how the software update function works clearly indicates that Mr. Schiller and Mr. Yanover had conceived of the software update feature, even if they had not yet drafted a lay-user explanation for how the operating software updates worked. Finally, the following excerpts from DS Exhibit 4

further corroborate that they had conceived of the software upgrade embodiment recited in the '573 Patent specification where the digital picture frame stores its software version number in its memory and receives the latest revision version number from the server system to determine whether an upgrade is available. The first excerpt below is from a list of data stored in the memory of the digital picture frame, the second from a list of data received by the digital picture frame from the server system:

Data Description

Redacted

Software Release
A Character string of length 8 indicating the revision level of the software currently running on the frame.

Data Received from the Server

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ıta Dictionary

file:///C|/Projects

Datum Name		Description
	Redacted	
soft_rev		ASCII software revision string
frame_loc	Re-	Frame Location

2. The '930 Patent

402. The Asserted Claims of the '930 Patent are claims 1-8 and 15. Claim 1 is an independent claim. Claims 2-8 are dependent claims that depend on independent claim 1. Claim 15 is a dependent claim that depends on independent claim 11.

403. The preamble of claim 1 states: *"A digital display apparatus having an integrated housing, said integrated housing comprising."* A POSITA would understand that what is meant by "an integrated housing" is that Mr. Schiller and Mr. Yanover's digital picture frame (which is a "digital display apparatus") has all of its hardware components (e.g., the display screen and control electronics) in a single housing, as opposed to having the display screen and control electronics in separate housings (as would be the case, for example, for a desktop computer that has a separate display monitor). Their conception of a digital picture frame that has an integrated housing for the display screen and electronic components is corroborated, for example, by the following excerpts from DS Exhibits 1 and 2, which describe that their digital picture frame will have a display screen and associated electronics housed in a "custom designed picture enclosure" that will fit into a standard traditional picture frame:

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display
- Onboard software control to allow automatic startup and "find home" capability
- Offboard power supply and onboard power transform
- Custom designed backlighting system using either cold cathode, LED, incandescent, etc..
- Custom designed picture enclosure with ability to fit into a standard traditional picture frame, thus requiring no special injection molded put packaging

Doctor Design
An Integrated Systems Company

Architecture Study

Prepared for

Dean Schiller/Paul Yanover

Proposal Date: August 12, 1999

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display

404. The first element of claim 1 states: "*an image display region on an outside surface of said integrated housing.*" That Mr. Schiller and Mr. Yanover had conceived of the feature of an image display region on the outside surface of the housing of their digital picture frame is corroborated by the same excerpts shown above in paragraph 403. While the excerpts do not expressly state that the image display region (i.e., the LCD) is on an outside surface of the housing, that is necessarily inherent for a digital picture frame, because otherwise one would not be able to see the displayed images.

405. The second and third elements of claim 1 state: "*a memory in an inside of said integrated housing,* said *memory comprising a plurality of image data files*." That Mr. Schiller and Mr. Yanover had conceived of the feature that the circuitry within the housing of their digital picture frame included memory for storing a plurality of image files is corroborated, for example, by the following excerpts from DS Exhibits 1 and 2:

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)

REQUIREMENTS & DESIGN GOALS

The Consumer Computing Device has the following requirements.

1. Long term cost goal of $100
2. Time to Market should be given highest priority
3. The device should be as simple as possible. Less is more.
4. The user should consider the device as a picture frame rather than a computer.
5. Added functions are less important that overall project cost.
6. The device contains only two connections; power and phone.
7. Device should retrieve and store between 7 and 10 pictures.

7. The proposed device would be able to store compressed images in 512 Kbytes of flash. The software is stored compressed in the other 512K bytes of flash and then uncompressed and transferred to dram during device initialization. Two Mbytes of Dram are used rather than an additional Mbyte of flash since Dram is $1/Mb versus $4.50/Mb for Flash.
8. Flash storage would retain the pictures and control information when the device is not powered.

406. The next three elements of claim 1 recite further items that are stored in the memory of their digital picture frame. To make the elements more readable, I will precede them with the clause "*said memory comprising. . . .*" Thus, the fourth element of claim 1 states: "*said memory comprising . . . security information comprising authentication information for a first remote server system*." Mr. Schiller and Mr. Yanover's conception that the memory of their digital picture frame includes authentication information that is used by their digital picture frame to authenticate their server system is corroborated, for example, in the following excerpts from DS Exhibit 3, which describe some exchanges of communications between their digital picture frame and server system during which the digital picture frame compares a "checksum" performed on authentication information received from the server system to "expected results."

- Example ftp dialogue:
  - Frame says.... ftp mothership.com
  - Frame sends... User/FrameID
  - 302 Password required
  - Frame sends pword.... Xxxxxxxx (this password may be dynamically generated. How would we want to do it, if it is dynamic?) (we own ftpd on server)

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- Server automagically places frame in its directory on server. Assume frame always in bin mode, as is server. Rest from frame perspective
- ftp> get [my authentication file] (okay to hardcode the name, but contents dynamically assigned. How would we want to do this?)
- checksum
- frame compares to expected results, then trusts server

407. The checksum algorithm that generates the "expected results" is an example of the claimed "authentication information" for the server system recited in this claim element. While not expressly stated, to be able to do such a comparison, it is inherent that that authentication information for the server system must be stored in the memory of the digital picture frame.

408. The fifth element of claim 1 is "*said memory comprising . . . a unique identifier for said digital display apparatus*." Mr. Schiller and Mr. Yanover's conception of the feature of a unique identifier for their digital picture frame that is stored in the memory of the digital picture frame is corroborated, for example, by the following excerpts from DS Exhibits 1, 2 and 3. The following excerpt from the *Executive Summary* of DS Exhibit 1, for example, states that each digital picture frame "is labeled with its own unique identification number:"

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

First, each LiveFrame picture frame is labeled with its own unique identification number. Upon

409. The following excerpt from DS Exhibit 3, in turn, states that the digital picture frame sends its "FrameID" to the server system. To do so, it is inherent that the "FrameID" is stored in the digital picture frame's memory:

FTP
- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says.... ftp mothership.com
  - Frame sends... User/FrameID

410. The following excerpt from DS Exhibit 3 describes that the "unique identifier for frame (aka frameID) is part of the "metadata" (which Mr. Schiller and Mr. Yanover also sometimes referred to as "control information" for the frame) stored in the memory of their digital picture frame:

Metadata for frame:
By frame.....
- serial number, unique identifier for frame (aka frameID)
- tick count (relative clock) (sent to server via log? Or as separate field?)
- lights on clock tick?
- lights out clock tick?
- dial time (delta to tick count for next dial instruction)
- contents of phone number fields
- slide show interval (how fast to run slide show)
- auto-slide-show-enable flag so when content changes, slide show initiated
- Background flavor bit for matted pictures (future need)
- Software and Hardware version numbers

411. The following excerpt also corroborates that Mr. Schiller and Mr. Yanover had conceived of storing the metadata/control information in the memory of their digital picture frame:

8. Flash storage would retain the pictures and control information when the device is not powered.
9. The selected LCD controller supports a 16 bit color frame buffer and 12 bit Frame Rate Modulation (FRM) for passive displays. The controller will drive both the VGA and ¼ VGA displays. Display selection was also based on cost and color density. Active displays that support 16 or 24 bit color are double the cost of passive displays that support 12 bit color through FRM. Sharp demonstrated their

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412. The sixth element of claim 1 is "*said memory comprising . . . a current version of onboard software*." Mr. Schiller and Mr. Yanover's conception of the feature of a current version of onboard software that is stored in the memory of the digital picture frame is corroborated, for example, as set forth in paragraphs 390 to 391 above.

413. The seventh element of claim 1 is "a processor configured to control the display of image data from said plurality of image data files in said image display region in accordance with said onboard software in said inside of said integrated housing." Mr. Schiller and Mr. Yanover's conception of having a processor in the digital picture frame for controlling the display of images in accordance with the onboard software ("image display logic") is corroborated, for example, in the following excerpts from the Executive Summary of DS Exhibit 1 and the Architecture Study of DS Exhibit 2:

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display
- Onboard software control to allow automatic startup and "find home" capability
- Offboard power supply and onboard power transform
- Custom designed backlighting system using either cold cathode, LED, incandescent, etc..
- Custom designed picture enclosure with ability to fit into a standard traditional picture frame, thus requiring no special injection molded out packaging

Doctor Design
An Integrated Systems Company

Architecture Study

Prepared for

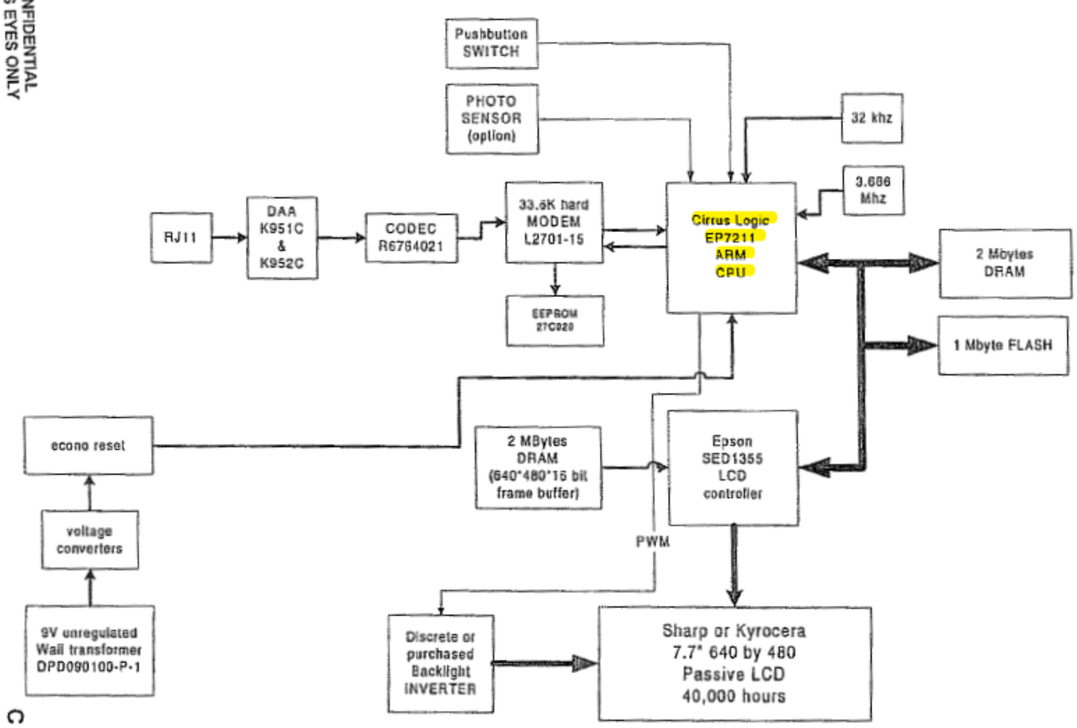
Dean Schiller/Paul Yanover

Proposal Date: August 12, 1999

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

DESIGN BLOCK DIAGRAM



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414. The eighth element of claim 1 is "communication circuitry configured to engage a network medium in said inside of said integrated housing under the control of said processor."

Mr. Schiller and Mr. Yanover's conception of having communication circuitry in the digital picture frame for engaging a network medium, such as for example a modem for connecting to the internet via an ISP, under the control of the processor, is corroborated, for example, in the following excerpts from DS Exhibits 1 and 2:

*Live*frame.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
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- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display
- Onboard software control to allow automatic startup and "find home" capability
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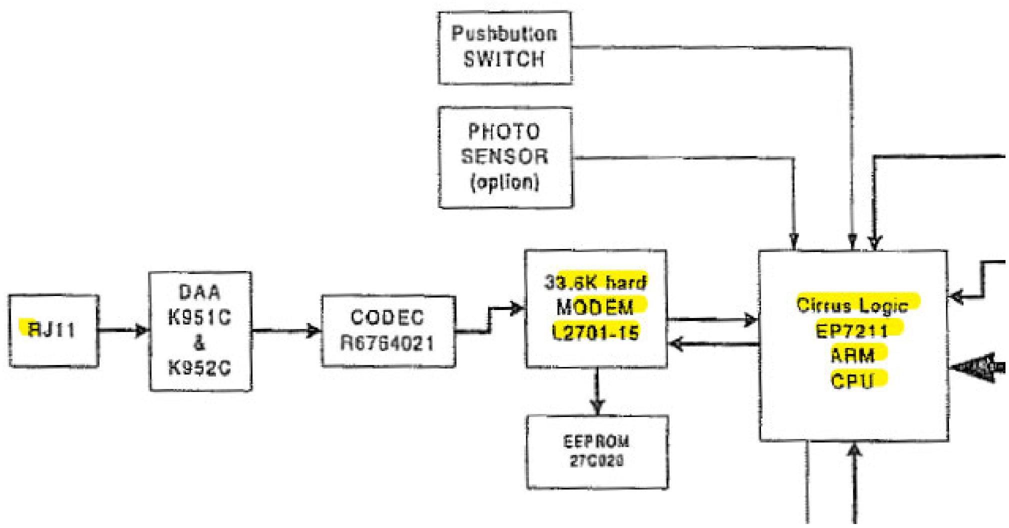
13. The device electronics will consist of the LCD, backlight and PCB. The PCB will be slightly larger than the display using some of the picture matting area. RJ11, switch and power cord are mounted on the PCB and protrude through cutouts in the cardboard frame. Some additional backing may be necessary to allow the unit to pass Class B certification for emissions needed for home use.

14. Phone calls will be scheduled via the web set up and maintained by timers in the unit. Modem software will check for a dial tone and will retry at a later time if the line is in use. It is possible for the user to try and call while the phone line is being used by the modem. This will be detected by additional noise on the line or dial tones. The device will immediately abort its call and hang up when user access is detected. The user would then need to click the receiver to restart their call.

15. Remote downloads of program information will be supported in the device application. This same scheme could be used for initial unit setup at the manufacturer.

16. Ethernet was not used in the current design. An Ethernet version of the device could be built with the same processor and LCD but would require a different PCB where the modem circuit would be replaced with Ethernet

DESIGN BLOCK DIAGRAM



415. The ninth element of claim 1 is "wherein said onboard software comprises: an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region." Mr. Schiller and Mr. Yanover's conception of the onboard software including software that obtains image data from memory for display on the display screen, is corroborated, for example, in the following excerpts from DS Exhibits 1 and 2:

*Live*frame.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

1. **LiveFrame picture frame**

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display

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Architecture Study

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Dean Schiller/Paul Yanover

Proposal Date: August 12, 1999

PROJECT DESCRIPTION

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416. The tenth element of claim 1 is "wherein said onboard software comprises . . . a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files." Mr. Schiller and

Mr. Yanover's conception of the onboard software including software that automatically initiates communications with their server system, sends requests for image data after initiating such communications, and receives one or more data files from their server system in response to the requests is corroborated, for example, in the following excerpts from DS Exhibits 1 and 2 and as further set forth in paragraphs 375 to 379 above.

*Live*frame.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

1. **LiveFrame picture frame**

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display

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Architecture Study

Prepared for

Dean Schiller/Paul Yanover

Proposal Date: August 12, 1999

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

417. The eleventh element of claim 1 is "wherein said onboard software comprises . . . an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system." Mr. Schiller and Mr. Yanover's conception of the onboard software including software that authenticates their server system before accepting image data from the server system is corroborated, for example, in the following excerpts from DS Exhibit 3, which describe some exchanges of communications between their digital picture frame and server system during which the digital picture frame compares a "checksum" performed on authentication information received from the server system to "expected results" before "trusting" the server system and receiving image data ("my package") from the server system. Authentication of the server by the frame prior to obtaining and storing the image data and preferences from current package data is disclosed, for example, on page 3 of DS Exhibit 3 (designated "C130") which describes the following actions performed by the frame:

- ftp> get [*my authentication file*] (okay to hardcode the name, but contents dynamically assigned. How would we want to do this?)
- checksum
- frame compares to expected results, *then trusts server*

418. The exchange of package data between the server and the frame is also disclosed under the heading "Package Formats" on page 6 (C 0133) of DS Exhibit 3, which lists the following package exchange:

- Package number one is authentication file from server to frame for verification of server.
- Package number two is metadata file from frame to server.
- Package number three is bundle of goods from server to frame.
- Package number four is clock tick package from server to frame.

419. The above sequence of package exchanges shows that it is only after the frame receives the "authentication file from server to frame for verification of server" that the frame receives the image data and preferences ("bundle of goods from server to frame").

FTP

- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says… ftp mothership.com
  - Frame sends… User/FrameID
  - 302 Password required
  - Frame sends pword…. Xxxxxxxx (this password may be dynamically generated. How would we want to do it, if it is dynamic?) (we own ftpd on server)

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  - Server automagically places frame in its directory on server. Assume frame always in bin mode, as is server. Rest from frame perspective
  - ftp> get [my authentication file] (okay to hardcode the name, but contents dynamically assigned. How would we want to do this?)
  - checksum
  - frame compares to expected results, then trusts server
  - ftp> put [my metadata] (assume all metadata transfers to server) (frame has to know how much data it is sending in this put to communicate with server at beginning of transfer)
  - ftp> get [my package]

Package Formats:

- Package number one is authentication file from server to frame for verification of server
- Package number two is metadata file from frame to server
- Package number three is bundle of goods from server to frame
- Package number four is clock tick package from server to frame

420. The software that implements the above authentication is an example of an authentication function included in Mr. Schiller and Mr. Yanover's digital picture frame's onboard

software. The following excerpts from pages 3 and 4 of DS Exhibit 4 confirm that the package data received from the server system ("my package") includes image data:

Data Received from the Server

	Picture List	
n_pict	Red.	Number of picture entries to follow
The following group of two entries will be repeated n_pict times in the data stream		
pict_id	Redac-ted	Unique code to identify the picture.
pict_flags		Settings for the picture.
	Display List	
disp_count	Red.	Number of display entries to follow
There will be disp_count of the following in the data stream.		
pict_id	Red.	Unique code to identify the picture.
	Picture Data	
n_pictures		Number of pictures to follow
The following will be repeated for each picture.		
pict_id	Re-dac-ted	ID for following picture
comp_len		Length of compressed data in bytes including pad data.
jfif_data	comp_len bytes of data. Padded to mod 4 boundary	

421. The last element of claim 1 is "wherein said onboard software comprises . . . a software update function configured to obtain an updated version of said onboard software from said server and to replace said current version of said onboard software in said memory with said updated version." Mr. Schiller and Mr. Yanover's conception of the onboard software including software that is configured to obtain an updated version of onboard software from their server system and replace the current version with the updated version in their digital picture frame's memory, is corroborated, for example, as set forth in paragraphs 397 to 401 above.

422. Dependent claim 2 adds the limitation to claim 1 that the "authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system." Mr. Schiller and Mr. Yanover's conception that the authentication function

of the software of their digital picture frame was configured to provide the digital picture frame's unique identifier ("FrameID") to their server system is corroborated, for example, by the following excerpt from DS Exhibit 3 that shows that their digital picture frame sends its FrameID to their server system:

FTP
- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says.... ftp mothership.com
  - Frame sends... User/FrameID

423. Dependent claim 3 adds the further limitation to claim 2 that the "authentication function authentication function is further configured to provide device authentication information to said first remote server system prior to obtaining image data from said first remote server system." Mr. Schiller and Mr. Yanover's conception that the authentication function of the software of their digital picture frame was configured to provide authentication information (e.g., a password) for the digital picture frame to their server system is corroborated, for example, by the following excerpt from DS Exhibit 3 that shows that their digital picture frame sends its password to their server system:

FTP
- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says.... ftp mothership.com
  - Frame sends... User/FrameID
  - 302 Password required
  - Frame sends pword.... Xxxxxxxx (this password may be dynamically generated. How would we want to do it, if it is dynamic?) (we own ftpd on server)

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424. Note that the question "How do we want to do it, if it is dynamic?" is a question from Ben Croy ("bennie"), who appears to have been the taker of the meeting notes at the meeting,

to Mr. Schiller and Mr. Yanover asking which way they would want to generate a dynamic password if they chose to implement a dynamic password instead of a static password.

425. Dependent claim 4 adds the limitation to claim 1 that the "onboard software further comprises an initialization function configured to prompt said first remote server system to associate a record with said digital display apparatus." Mr. Schiller and Mr. Yanover's conception that the onboard software of their digital picture frame included software that sent a communication to their server system to associate a record at the server system with the digital picture frame is corroborated, for example, by the following excerpt from DS Exhibit 3 that shows that the sending by their digital picture frame of its FrameID and password to their server system prompts their server system to associate a record at the server system with the digital picture frame by the server automatically placing a record for the frame in its directory ("places frame in its directory" obviously does not mean the digital picture frame itself but data referring to the digital picture frame):

FTP

- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says… ftp mothership.com
  - Frame sends… User/FrameID
  - 302 Password required
  - Frame sends pword… Xxxxxxxx (this password may be dynamically generated. How would we want to do it, if it is dynamic?) (we own ftpd on server)

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- Server automagically places frame in its directory on server. Assume frame always in bin mode, as is server. Rest from frame perspective

426. Dependent claim 5 adds the limitation to claim 1 that the "*digital display apparatus is configured to display an account initialization message*." Mr. Schiller and Mr. Yanover's conception that their digital picture frame would display account initialization messages is corroborated, for example, by the following excerpts from DS Exhibits 1 and 3. The following excerpt from the *Executive Summary* of DS Exhibit 1 corroborates that an account initialization message Mr. Schiller and Mr. Yanover had conceived of was a message displayed by the digital picture frame the first time it is powered up ("Upon startup") that prompts the user to visit the liveframe.com website using a computer to register the frame with the LiveFrame.com server system. While the excerpt does not explicitly refer to the displayed message, it is inherent, because the displayed message is what prompts the user to go "to LiveFrame.COM to register the frame":

*Live*frame.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

First, each LiveFrame picture frame is labeled with its own unique identification number. Upon startup, the user goes to LiveFrame.COM to register the frame and assign it a unique username – perhaps paul@liveframe.com. Like an email mailbox, we create a LiveFrame **PictureBox**, a place to store online pictures that will be downloaded to the LiveFrame picture frame. Additionally, users indicate the LiveFrame picture frame configurations. They are simple:

1. Where is this frame?
   - Indicated by Country and Postal Code, **e.g. USA, 90046**
     (This location information will be used to select a local access telephone number)
2. When does this frame want to get updates?
   - Indicated by frequency and time of day, **e.g. Every Sunday at 3:00am PST**

427. Another account initialization message that Mr. Schiller and Mr. Yanover had conceived of is a message displayed by an image downloaded by their digital picture frame from the server system ("The 11th picture") containing an account initialization message confirming that the digital picture frame has been registered with the server system. Their conception of this

account initialization message is corroborated by, for example, the following excerpt from DS Exhibit 3:

Other Stuff the Frame will be doing:

- Frame will normally store compressed, and undithered images in flash. When powered up, the frame will decode jpeg and show undithered images immediately, while it goes to work on dithering subsequent images.
- The 11th picture:
  - Is a picture generated and downloaded from server
  - Has frame serial number/identifier
  - Has "This frame belongs to [registered ownername]"?
  - Has phone number
  - Has approximate connect time
  - Has thumbnail of all frames, like and index print from Kodak, or packing slip from UPS
  - Is replaced by internally generated 11th if a critical error occurs

428. Dependent claim 6 adds the limitation to claim 5 that the "*account initialization message prompts a user to create an account with said first remote server system.*" This is the first account initialization message discussed in paragraph 426 above, and Mr. Schiller and Mr. Yanover's conception of such an account initialization message that prompts the user to create an account at (i.e., register the digital picture frame with) their server system is corroborated, for example, as set forth in paragraphs 426 to 427 above.

429. Dependent claim 7 adds the limitation to claim 1 that the digital display apparatus' *"memory comprises a connection timing parameter that indicates a timing interval for said digital display apparatus to automatically initiate periodic connections with said first remote server system."* Mr. Schiller and Mr. Yanover's conception of a connection timing parameter stored in the memory of the digital picture frame that indicates a timing interval for initiating periodic connections to their server system is corroborated, for example, by the following excerpts from DS Exhibits 1, 2 and 3. The first excerpt below, from the Executive Summary of DS Exhibit 1, states that one of the configurations a user can set on the Liveframe.com website is the "frequency and time of day" for their digital picture frame to connect to their server system to get updates.

The frequency and time of day (e.g., "every Sunday at 3:00 am PST") define an embodiment of the claimed "timing interval."

First, each LiveFrame picture frame is labeled with its own unique identification number. Upon startup, the user goes to LiveFrame.COM to register the frame and assign it a unique username – perhaps paul@liveframe.com. Like an email mailbox, we create a LiveFrame **PictureBox**, a place to store online pictures that will be downloaded to the LiveFrame picture frame. Additionally, users indicate the LiveFrame picture frame configurations. They are simple:

1. Where is this frame?
   - Indicated by Country and Postal Code, **e.g. USA, 90046**
     (This location information will be used to select a local access telephone number)

2. When does this frame want to get updates?
   - Indicated by frequency and time of day, **e.g. Every Sunday at 3:00am PST**

For the example above, we have created a LiveFrame picture frame account for a frame in California, USA, 90046 under the username paul@liveframe.com. It will automatically dial into the Internet using a local number each Sunday night at 3.00am PST to download the pictures from its registered online PictureBox.

430. The following excerpt, from the *Architecture Study* of DS Exhibit 2, for example, corroborates that Mr. Schiller and Mr. Yanover conceived of storing the timing interval, which is an example of configuration information for their digital picture frame that they also refer to as "control information" for the digital picture frame, in the memory ("flash storage") of their digital picture frame:

7. The proposed device would be able to store compressed images in 512 Kbytes of flash. The software is stored compressed in the other 512K bytes of flash and then uncompressed and transferred to dram during device initialization. Two Mbytes of Dram are used rather than an additional Mbyte of flash since Dram is $1/Mb versus $4.50/Mb for Flash.
8. Flash storage would retain the pictures and control information when the device is not powered.

431. The following excerpt from DS Exhibit 3 also corroborates that the timing interval ("time to dial") is stored in memory of the digital picture frame ("Frame knows time to dial" means the Frame has the time to dial in its memory):

A Normal Connection to mothership.com:

Dialing
- Basic function...
  - Frame knows time to dial
  - Picks up phone checks for dialtone
  - Dials number using tone

432. Dependent claim 8 adds the limitation to claim 1 that the digital display apparatus' *"memory comprises an image display parameter comprising a timing interval for periodically selecting an image data file from said memory for rendering on said display region."* Mr. Schiller and Mr. Yanover's conception of a timing interval for the digital picture frame to select an image data file from the memory to show on the display screen, such as, for example, a slide show interval, that is stored in the memory of the digital picture frame, is corroborated, for example, by the following excerpts from DS Exhibit 3. The first excerpt below, from DS Exhibit 3, describes the "slide show" mode of the digital picture frame we conceived, which features a "'slide interval' programmed for the frame" ("programmed for the frame" means that it is stored in the memory of their digital picture frame):

What is slide show mode?

- Slide show mode is the normal state of operation of the frame. Pictures that have the "marked for slide show" flag are displayed one after the other for the amount of time specified in the "slide interval" programmed for the frame.
-

433. The following excerpt further corroborates that the "slide show interval" is part of the "metadata" that is stored in the memory of their digital picture frame:

Metadata for frame:

By frame.....

- serial number, unique identifier for frame (aka frameID)
- tick count (relative clock) (sent to server via log? Or as separate field?)
- lights on clock tick?
- lights out clock tick?
- dial time (delta to tick count for next dial instruction)
- contents of phone number fields
- slide show interval (how fast to run slide show)
- auto-slide-show-enable flag so when content changes, slide show initiated

434. Dependent claim 15 is dependent on independent claim 11. Independent claim 11 consists of all of the claim elements of independent claim 1 plus the added element that the onboard software's image display function displays images from memory based on a value of an image display parameter. Mr. Schiller and Mr. Yanover's conception of all the elements of claim 11

(other than the image display parameter element) is corroborated, for example, as set forth for the corresponding elements of claim 1 in paragraphs 403 to 421 above.

435. Mr. Schiller and Mr. Yanover's conception of the onboard software's image display function displaying images from memory on the display screen in accordance with an image display parameter is corroborated, for example, by the following excerpt from DS Exhibit 3, which describes a number of such image display parameters that they had conceived, including times when the display of the frame is on ("lights on clock tick," "lights out clock tick"), pictures that are displayed in slide show mode ("slide show tag"), and slide show order ("display list"), as well as the "slide show interval" already discussed above in paragraph432:

Metadata for frame:

By frame.....

- serial number, unique identifier for frame (aka frameID)
- tick count (relative clock) (sent to server via log? Or as separate field?)
- lights on clock tick?
- lights out clock tick?
- dial time (delta to tick count for next dial instruction)
- contents of phone number fields
- slide show interval (how fast to run slide show)
- auto-slide-show-enable flag so when content changes, slide show initiated
- Background flavor bit for matted pictures (future need)
- Software and Hardware version numbers

By Image.....

- ImageID
- slide show order (display list) (1-10) (part of image ID?)
- mark for slide show flag (part of image ID?)

436. Dependent claim 15 adds to the elements of independent claim 11 the element that the "*digital display apparatus is configured to display an account initialization message served from said server system*." That Mr. Schiller and Mr. Yanover conceived of their digital picture frame being configured to display an account initialization message served from their server system is corroborated, for example, as set forth above in paragraph426 above (the first of the two account initialization messages discussed in paragraph 426).

3. The '562 Patent

437. The Asserted Claims of the '562 Patent are claims 1, 4, 11, 16-17 and 20. Claim 1 is an independent claim. The remaining Asserted Claims of the '562 Patent are dependent on independent claim 1.

438. The preamble of claim 1 states: "*An apparatus for displaying content comprising image data received from a server system via a communications network on a display screen comprising.*" Mr. Schiller and Mr. Yanover's conception of an apparatus for displaying images (their digital picture frame) received from a server system via a network (the internet) on a display screen (an LCD display) is corroborated, for example, by the following excerpts from DS Exhibits 1 and 2:

Imagine a picture frame that has the ability to load its own pictures directly from the Internet. With nothing more than a power cord and a telephone connection, the LiveFrame comes to life. In fact, the LiveFrame looks, feels and acts like any traditional picture frame, with one exception -- its high resolution state-of-the-art digital screen promises up to date pictures on demand, anytime, anywhere.

And that's just the beginning, because at LiveFrame.COM, our users have the ability to customize their frame to expand it beyond just family photos -- from weather reports, art collections, greeting cards, movie posters, post cards, live cameras and comics, LiveFrame.COM provides a vast array of LiveChannels each ready to automatically update picture frames around the world.

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Ceiva-A 00003843

Jul 15 99 09:33a Carolyn Prousky 323-656-8049 p.4

*Live*frame.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

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1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display
- Onboard software control to allow automatic startup and "find home" capability
- Offboard power supply and onboard power transform
- Custom designed backlighting system using either cold cathode, LED, incandescent, etc..
- Custom designed picture enclosure with ability to fit into a standard traditional picture frame, thus requiring no special injection molded out packaging

Doctor Design
An Integrated Systems Company

Architecture Study

Prepared for

Dean Schiller/Paul Yanover

Proposal Date: August 12, 1999

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

439. The first element of claim 1 is: "*said display screen*." Mr. Schiller and Mr. Yanover's conception that their digital picture frame included an LCD display screen is corroborated, for example, by the following excerpts from DS Exhibits 1 and 2:

1. LiveFrame picture frame

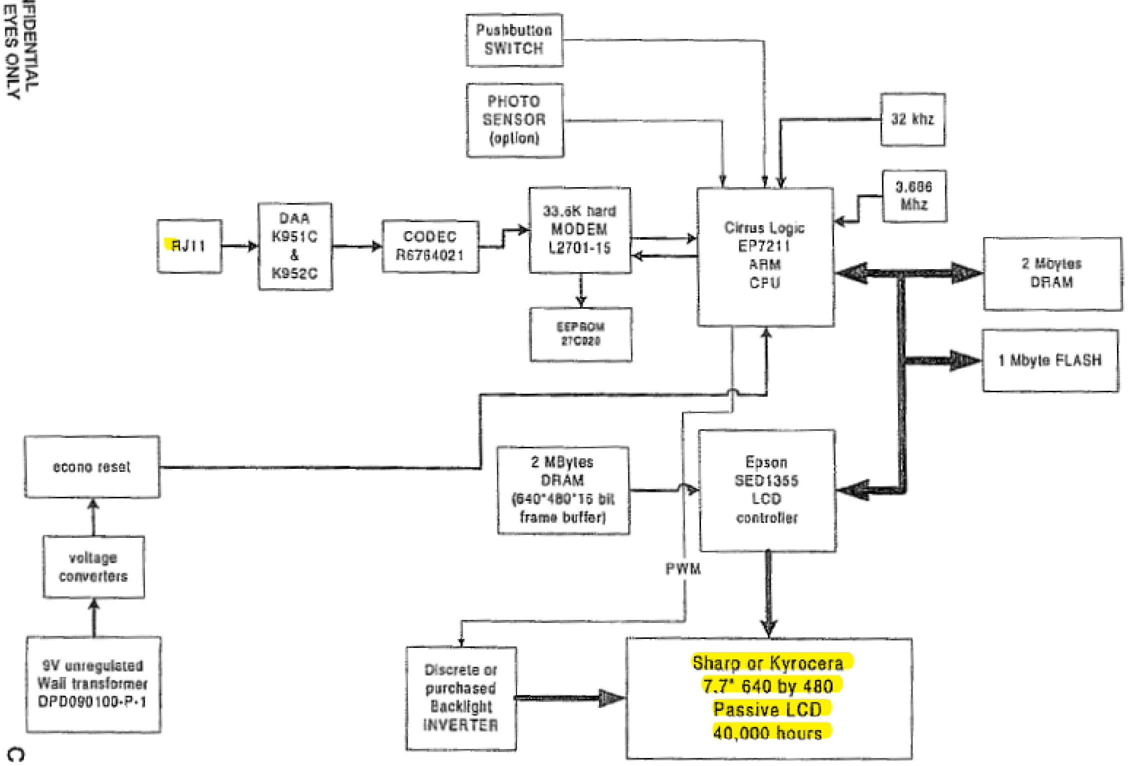
The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

DESIGN BLOCK DIAGRAM



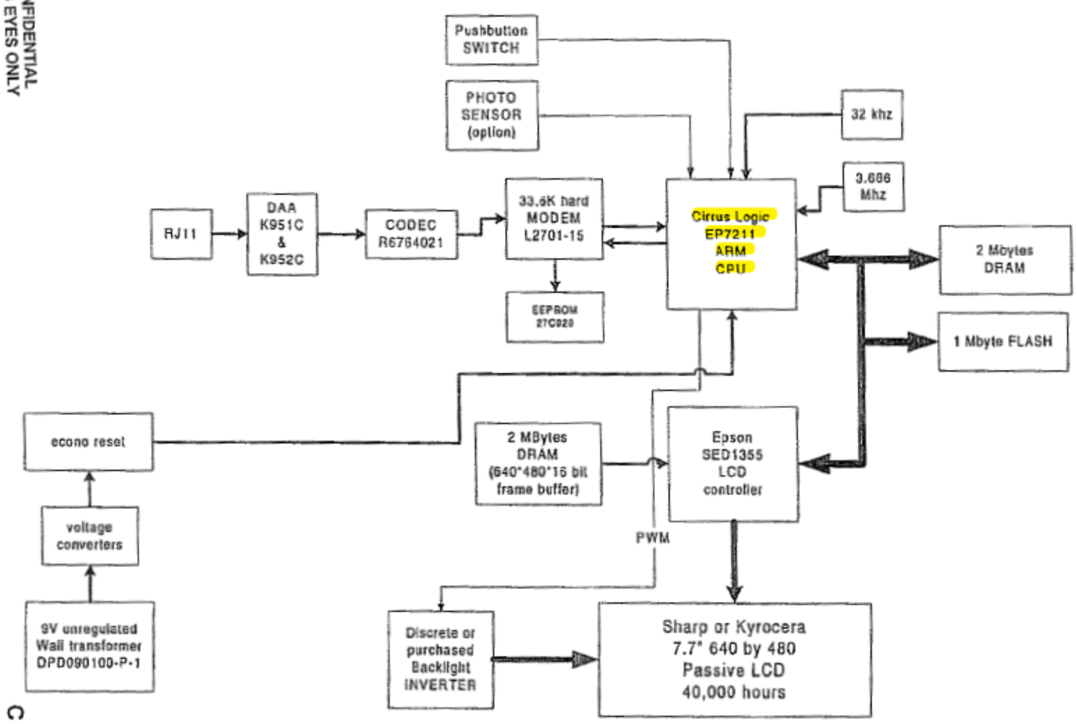
440. The second element of claim 1 is: "*a central processing unit*." Mr. Schiller and Mr. Yanover's conception that their digital picture frame included a central processor/CPU is corroborated, for example, by the following excerpts from DS Exhibits 1 and 2:

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components.

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic

DESIGN BLOCK DIAGRAM



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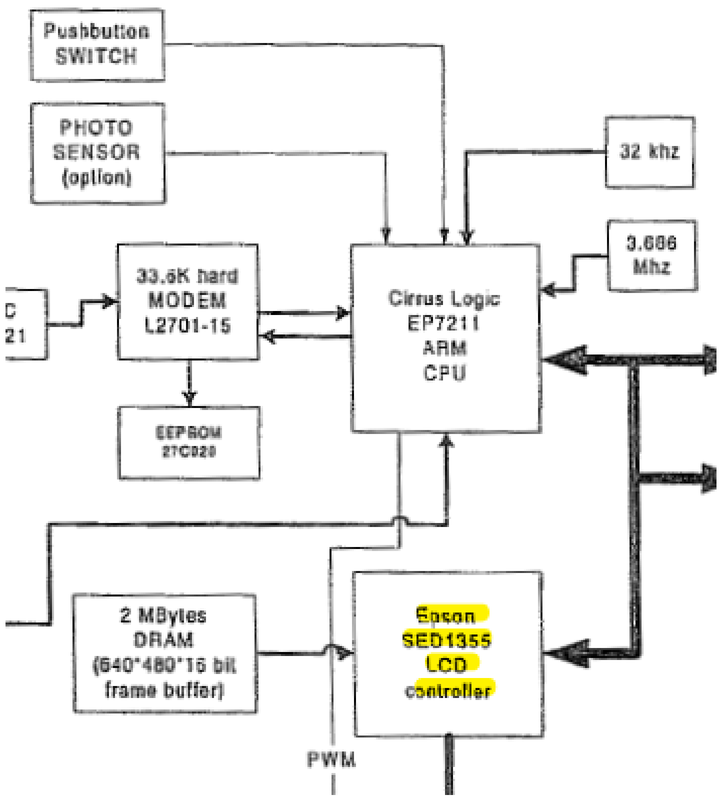
441. The third element of claim 1 is: "*a video controller configured to control display of said content on said display screen*." Mr. Schiller and Mr. Yanover's conception that their digital picture frame included a video controller is corroborated, for example, by the following excerpts from DS Exhibit 2:

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display

DESIGN BLOCK DIAGRAM



442. The fourth element of claim 1 is: "*a communications interface configured to communicate with said server system via said communications network.*" Mr. Schiller and Mr. Yanover's conception that their digital picture frame included a communications interface (modem) for communicating with their server system via the communications network (internet) is corroborated, for example, by the following excerpts from DS Exhibits 1 and 2:

***Live*frame.COM**

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display
- Onboard software control to allow automatic startup and "find home" capability
- Offboard power supply and onboard power transform
- Custom designed backlighting system using either cold cathode, LED, incandescent, etc..
- Custom designed picture enclosure with ability to fit into a standard traditional picture frame, thus requiring no special injection molded put packaging

Doctor Design
An Integrated Systems Company

Architecture Study

Prepared for

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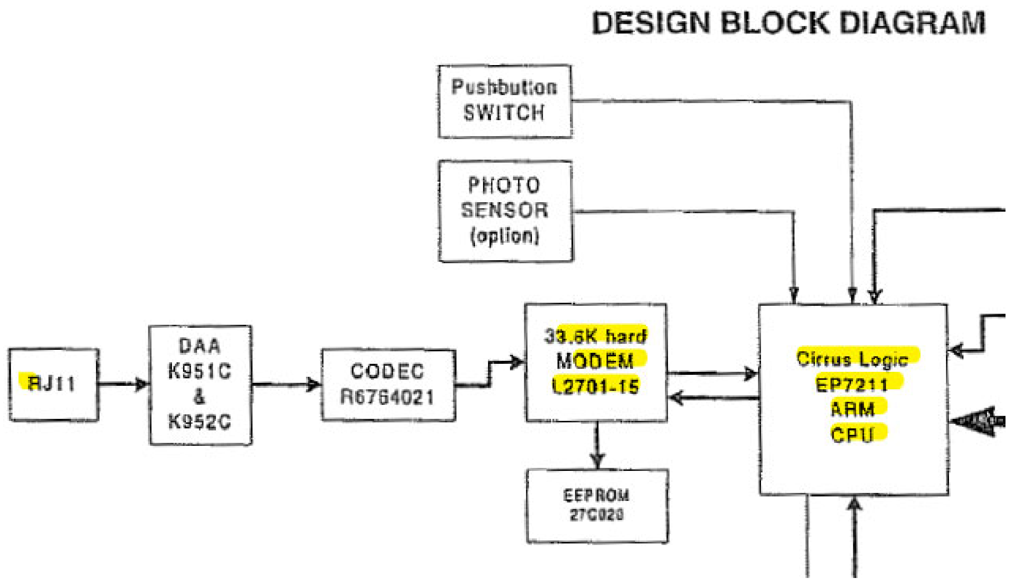
Proposal Date: August 12, 1999

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

13. The device electronics will consist of the LCD, backlight and PCB. The PCB will be slightly larger than the display using some of the picture matting area. RJ11, switch and power cord are mounted on the PCB and protrude through cutouts in the cardboard frame. Some additional backing may be necessary to allow the unit to pass Class B certification for emissions needed for home use.
14. Phone calls will be scheduled via the web set up and maintained by timers in the unit. Modem software will check for a dial tone and will retry at a later time if the line is in use. It is possible for the user to try and call while the phone line is being used by the modem. This will be detected by additional noise on the line or dial tones. The device will immediately abort its call and hang up when user access is detected. The user would then need to click the receiver to restart their call.
15. Remote downloads of program information will be supported in the device application. This same scheme could be used for initial unit setup at the manufacturer.
16. Ethernet was not used in the current design. An Ethernet version of the device could be built with the same processor and LCD but would require a different PCB where the modem circuit would be replaced with Ethernet



443. The fifth element of claim 1 is: "*a memory comprising a unique identifier for said apparatus*." Mr. Schiller and Mr. Yanover's conception that their digital picture frame included a unique identifier for the digital picture frame (FrameID) is corroborated, for example, by the following excerpts from DS Exhibits 1, 2 and 3. The following excerpt from the *Executive Summary* of DS Exhibit 1, for example, states that each digital picture frame "is labeled with its own unique identification number:"

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

First, each LiveFrame picture frame is labeled with its own unique identification number. Upon

444. The following excerpt from DS Exhibit 3, in turn, states that the digital picture frame sends its "FrameID" to the server system. To do so, it is inherent that the "FrameID" is stored in the digital picture frame's memory:

FTP

- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says.... ftp mothership.com
  - Frame sends... User/FrameID

445. The following excerpt from DS Exhibit 3 describes that the "unique identifier for frame (aka frameID)" is part of the "metadata" (which Mr. Schiller and Mr. Yanover also sometimes referred to as "control information" for the frame) stored in the memory of their digital picture frame:

Metadata for frame:

By frame.....

- serial number, unique identifier for frame (aka frameID)
- tick count (relative clock) (sent to server via log? Or as separate field?)
- lights on clock tick?
- lights out clock tick?
- dial time (delta to tick count for next dial instruction)
- contents of phone number fields
- slide show interval (how fast to run slide show)
- auto-slide-show-enable flag so when content changes, slide show initiated
- Background flavor bit for matted pictures (future need)
- Software and Hardware version numbers

446. The following excerpt also corroborates that they had conceived of storing the metadata/control information in the memory of their digital picture frame:

8. Flash storage would retain the pictures and control information when the device is not powered.
9. The selected LCD controller supports a 16 bit color frame buffer and 12 bit Frame Rate Modulation (FRM) for passive displays. The controller will drive both the VGA and ¼ VGA displays. Display selection was also based on cost and color density. Active displays that support 16 or 24 bit color are double the cost of passive displays that support 12 bit color through FRM. Sharp demonstrated their

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447. The sixth element of claim 1 is: "memory comprising . . . computer readable instructions different from said content for controlling the operation of said apparatus." Mr. Schiller and Mr. Yanover's conception that the memory of their digital picture frame included

computer readable instructions (software) different from the content (image data) is corroborated, for example, by the following excerpts from DS Exhibits 1 and 2:

1. LiveFrame picture frame

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display
- Onboard software control to allow automatic startup and "find home" capability

7. The proposed device would be able to store compressed images in 512 Kbytes of flash. The software is stored compressed in the other 512K bytes of flash and then uncompressed and transferred to dram during device initialization. Two Mbytes of Dram are used rather than an additional Mbyte of flash since Dram is $1/Mb versus $4.50/Mb for Flash.

8. Flash storage would retain the pictures and control information when the device is not powered.

9. The selected LCD controller supports a 16 bit color frame buffer and 12 bit Frame Rate Modulation (FRM) for passive displays. The controller will drive both the VGA and ¼ VGA displays. Display selection was also based on cost and color density. Active displays that support 16 or 24 bit color are double the cost of passive displays that support 12 bit color through FRM. Sharp demonstrated their

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448. The seventh element of claim 1 is: "*memory comprising . . . a version identifier for said computer readable instructions*." Mr. Schiller and Mr. Yanover's conception that the memory of their digital picture frame included a version identifier for the computer readable instructions (onboard software) is corroborated, for example, by the following excerpt from DS Exhibit 3, which lists types of what we referred to as "Metadata" that is stored in the memory of their digital picture frame:

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Metadata for frame:
By frame.....
- serial number, unique identifier for frame (aka frameID)
- tick count (relative clock) (sent to server via log? Or as separate field?)
- lights on clock tick?
- lights out clock tick?
- dial time (delta to tick count for next dial instruction)
- contents of phone number fields
- slide show interval (how fast to run slide show)
- auto-slide-show-enable flag so when content changes, slide show initiated
- Background flavor bit for matted pictures (future need)
- Software and Hardware version numbers

449. The eighth element of claim 1 is: *"said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network."* Mr. Schiller and Mr. Yanover's conception that their digital picture frame included software that caused it to initiate communications with their server system via the internet on connection to a power source and communications source is corroborated, for example, by the following excerpts from DS Exhibits 1, 2 and 3:

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

11. Device initialization is done completely under software control. An 800 number will be called as soon as power and phone dial tone can be established. The device will contain control and interface software so that it can access a database to *retrieve setup and display information*. *It* is expected that a local number can be received as part of the set up information that will be used for future calls.

Product Design and Functionality of the Frame....
(9/10/99, with updates from 9/14/99, 9/16/99 meetings)

Summary: This document is a distillation of how the system works from a frame perspective. It is meant to be a guideline for communication between us, the frame software folks, and the frame hardware folks.

Basic Operational States of Frame:

I just got my new frame out of the box....

- User plugs phone and power into the wall
  - You should get a nice intro screen, "Congratulations on your frame purchase"
  - Other pictures can start in slide show. Intro and other pictures are burned in during manufacture, and are the same for every frame. As in normal operation, the frame will show undithered jpeg's, while working to dither all images.
  - You can force dial it by holding down the button
  - If you don't force a dial, will it try to dial automatically after some time period?
  - The first time the frame dials the configuration 800 number
  - *The configuration connection picks up local phone number from CallerID and the local* dialing configuration information if there is any.
  - The frame hangs up after the config connection, then dials it's new local number.

450. The ninth element of claim 1 is: *"said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: . . . sending by said apparatus said unique identifier to said server system."* Mr. Schiller and Mr. Yanover's conception that the software of their digital picture frame included instructions for causing the digital picture frame to send its unique identifier (FrameID) to their server system is corroborated, for example, by the following excerpt from DS Exhibit 3, which shows that the FrameID is sent by their digital picture frame to the server system (mothership.com):

FTP

- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says.... ftp mothership.com
  - Frame sends... User/FrameID

451. The tenth element of claim 1 is: *"said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: . . . sending by said apparatus said version identifier to said server system."* Mr. Schiller and Mr. Yanover's conception that the software of their digital picture frame included instructions for causing the digital picture frame to

send the version identifier of its onboard software to their server system is corroborated, for example, by the following excerpt from DS Exhibits 3 and 4. The first two excerpts below, form Figure 3, shows that their digital picture frame sends its "metadata" to the server system (mothership.com) and that the metadata includes "Software and Hardware version numbers":

FTP

- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says… ftp mothership.com
  - Frame sends… User/FrameID
  - 302 Password required
  - Frame sends pword…. Xxxxxxxx (this password may be dynamically generated. How would we want to do it, if it is dynamic?) (we own ftpd on server)

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- Server automagically places frame in its directory on server. Assume frame always in bin mode, as is server. Rest from frame perspective
- ftp> get [my authentication file] (okay to hardcode the name, but contents dynamically assigned. How would we want to do this?)
- checksum
- frame compares to expected results, then trusts server
- ftp> put [my metadata] (assume all metadata transfers to server) (frame has to know how much data it is sending in this put to communicate with server at beginning of transfer)

Metadata for frame:

By frame.....

- serial number, unique identifier for frame (aka frameID)
- tick count (relative clock) (sent to server via log? Or as separate field?)
- lights on clock tick?
- lights out clock tick?
- dial time (delta to tick count for next dial instruction)
- contents of phone number fields
- slide show interval (how fast to run slide show)
- auto-slide-show-enable flag so when content changes, slide show initiated
- Background flavor bit for matted pictures (future need)
- Software and Hardware version numbers

452. The following excerpts, from Figure 4, confirm that the data included in a transmission for the digital picture frame to the server includes an "ASCII software revision string":

Format of Transmission to the Server

name	Description
Redacted	
soft_rev	ASCII software revision string

453. The eleventh element of claim 1 is: "*said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: . . . prompting by said apparatus a user of said apparatus to create an account at said server system.*" Mr. Schiller and Mr. Yanover's conception that the software of their digital picture frame included instructions for causing the digital picture frame to prompt a user to create an account at their server system (liveframe.com) is corroborated, for example, by the following excerpt from the Executive Summary of DS Exhibit 1, which corroborates that Mr. Schiller and Mr. Yanover had conceived of the digital picture frame displaying a message the first time it is powered up ("Upon startup") that prompts the user to visit the liveframe.com website using a computer to register the frame with their server system. While the excerpt does not explicitly refer to the displayed message, it is

inherent, because that displayed message is what prompts the user to go "to LiveFrame.COM to register the frame" as described in the excerpt:

Liveframe.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

First, each LiveFrame picture frame is labeled with its own unique identification number. Upon startup, the user goes to LiveFrame.COM to register the frame and assign it a unique username – perhaps paul@liveframe.com. Like an email mailbox, we create a LiveFrame **PictureBox**, a place to store online pictures that will be downloaded to the LiveFrame picture frame. Additionally, users indicate the LiveFrame picture frame configurations. They are simple:

1. Where is this frame?
   - Indicated by Country and Postal Code, **e.g. USA, 90046**
     (This location information will be used to select a local access telephone number)

2. When does this frame want to get updates?
   - Indicated by frequency and time of day, **e.g. Every Sunday at 3:00am PST**

454. The twelfth and thirteenth elements of claim 1 are: "*said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: . . .receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system; updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions.*" Mr. Schiller and Mr. Yanover's conception that the software of their digital picture frame included instructions for causing the digital picture frame to receive and install updated operating software from the server system is corroborated, for example, by the following excerpts from DS Exhibits 2-4. The following excerpts are from the Architecture Study of DS Exhibit 2:

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Architecture Study

Prepared for

Dean Schiller/Paul Yanover

Proposal Date: August 12, 1999

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

Dean Schiller/Paul Yanover

11. Device should self-initialized out of the box by calling a pre-programmed 800 number to obtain set up and control information.
12. Device should have an auto-dim feature.
13. Device packaging should be as simple as possible and be able to be packaged into at least 6 different frame types.
14. Devices phone connection should not interfere with user calls on the same telephone line.
15. Device should support remote program upgrades.
16. Future version of the device should support Ethernet access.

7. The proposed device would be able to store compressed images in 512 Kbytes of flash. The software is stored compressed in the other 512K bytes of flash and then uncompressed and transferred to dram during device initialization. Two Mbytes of Dram are used rather than an additional Mbyte of flash since Dram is $1/Mb versus $4.50/Mb for Flash.

15. Remote downloads of program information will be supported in the device application. This same scheme could be used for initial unit setup at the manufacturer.

455. Taken together, the above excerpts corroborate that Mr. Schiller and Mr. Yanover had conceived of the feature that their digital picture frame would download operating system updates from the server system, store the software in flash memory in compressed form, and then uncompress the software and transfer to dram when the device initializes (i.e., starts and restarts). The following excerpts from DS Exhibits 3 and 4 provide further corroboration. The first is a question from a list of potential user questions on how their digital picture frame operates (i.e., a

potential FAQ) on page 4 of DS Exhibit 3, which states "There is a new software upgrade available from mothership.com . . . how does that work?":

When I hit a button during lights out, what happens?
- The frame goes to lights on mode for some period of time.
- If you were in slide show, you can hit the button again to come out of slide show

How can I change the brightness of my frame?
- There is a dimming pushbutton on the side. When you hold this button down, frames cycles up and down in brightness. You release the button to accept the current brightness level.

I've had my frame for awhile, and power to the frame was lost
- o Power comes back up. Clock continues to click from last flash writing time
- o Dialing occurs as normal at next apparent schedule.

How can I tell if my frame connected last night?
- If you manually advance your frame to the "11th picture" you will either see a note about last connection, or you will see an error pattern. (flesh out error pattern explanation)

There is a new software upgrade available from mothership.com... how does that work?
-

456. While Mr. Schiller and Mr. Yanover appear to not yet have drafted the language to provide a lay answer to this FAQ to a user, taken together with the other cited portions of the exhibits, this excerpt from DS Exhibit 3 further corroborates that Mr. Schiller and Mr. Yanover had conceived of the software update feature. Finally, the following excerpts from DS Exhibit 4 further corroborate that they had conceived of a software upgrade embodiment where the digital picture frame stores its software version number in its memory and receives the latest revision version number from the server system to determine whether an upgrade is available. The first excerpt below is from a list of data stored in the memory of the digital picture frame, the second from a list of data received by the digital picture frame from the server system:

Data Description

Redacted

Software Release
A Character string of length 8 indicating the revision level of the software currently running on the frame.

Data Received from the Server

Datum Name		Description
	Redacted	
soft_rev		ASCII software revision string
frame_loc	Re-	Frame Location

457. The last two elements of claim 1 are: *"said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: . . .receiving by said apparatus updated content from said server system; displaying by said apparatus said updated content on said display screens."* Mr. Schiller and Mr. Yanover's conception that the software of their digital picture frame included instructions for causing the digital picture frame to receive and display updated content (images) from the server system is corroborated, for example, by the following excerpts from DS Exhibits 1 and 2:

*Live*frame.COM

How does LiveFrame work?

The concept is simple enough. Plug in the LiveFrame picture frame and it automatically dials up the telephone, connects to the Internet and downloads pictures to its screen.

1. **LiveFrame picture frame**

The LiveFrame picture frame is a consumer electronics product. It consists of the following principle components:

- A selection of TFT or STN LCD displays at different sizes
- Between 1-2 megabytes of RAM (possible Flash for image retention)
- A modem with a standard RJ-11 telephone connector or optional wireless telephone connection
- A central processor to handle telecommunications and image display logic
- A hardware interface and associated software logic to facilitate image advancing
- An integrated custom designed PCB to house components and circuitry
- Onboard software control to enable programmatic control of telecom connections, image download and image display

Doctor Design
An Integrated Systems Company

Architecture Study

Prepared for

Dean Schiller/Paul Yanover

Proposal Date: August 12, 1999

PROJECT DESCRIPTION

The Consumer Computing Device is a Liquid Crystal Display (LCD) and associated control logic that mounts in a standard picture frame. The basic device electronics are a processor, memory, modem, LCD controller and single user switch. The basic function of this device is to periodically retrieve display content and updated control information from a server database via the modem, and to continually sequence through and display the stored content. The user sets up the device control and display content through other standard methods for accessing Internet Web sites. This report contains the results from a comprehensive study of the issues relating to the development process for the Consumer Computing Device.

458. Dependent claim 4 adds the element to claim 1 that the computer readable instructions "*comprise instructions for causing said apparatus to receive location information of said apparatus from said server system*." Mr. Schiller and Mr. Yanover's conception that the software of their digital picture frame included software to cause the digital picture frame to receive location information from their server system is corroborated, for example, by the following excerpts from DS Exhibit 4, which describe that the data received by their digital picture frame from their server system included "Frame Location" data:

Data Received from the Server

HIGHLY CONFIDENTIAL
ATTORNEY'S EYES ONLY

ta Dictionary

file:///C|/Pr

Datum Name		Description
	Redacted	
soft_rev		ASCII software revision string
frame_loc	Re-	Frame Location
cur_time	dac-	[illegible]

459. Dependent claim 11 adds the element to claim 1 that the computer readable instructions "*comprise instructions for causing said apparatus to transmit metadata to said server system*." Mr. Schiller and Mr. Yanover's conception that the software of their digital picture frame included software to cause the digital picture frame to send its metadata to their server system is corroborated, for example, by the following excerpts from DS Exhibit 4:

FTP
- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
    - Frame says… ftp mothership.com
    - Frame sends… User/FrameID
    - 302 Password required
    - Frame sends pword…. Xxxxxxxx (this password may be dynamically generated. How would we want to do it, if it is dynamic?) (we own ftpd on server)

C 0129

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- Server automagically places frame in its directory on server. Assume frame always in bin mode, as is server. Rest from frame perspective
- ftp> get [my authentication file] (okay to hardcode the name, but contents dynamically assigned. How would we want to do this?)
- checksum
- frame compares to expected results, then trusts server
- ftp> put [my metadata] (assume all metadata transfers to server) (frame has to know how much data it is sending in this put to communicate with server at beginning of transfer)

460. Dependent claim 16 adds the element to claim 1 that the computer readable instructions "*comprise instructions for causing said apparatus to transmit authentication information to said server system*." Mr. Schiller and Mr. Yanover's conception that the software of their digital picture frame included software to cause the digital picture frame to send authentication information (e.g., a password) for the digital picture frame to their server system is corroborated, for example, by the following excerpt from DS Exhibit 3 that shows that their digital picture frame sends its password to their server system:

FTP

- Assuming that frame is up at ISP with IP information and can talk
- Example ftp dialogue:
  - Frame says…. ftp mothership.com
  - Frame sends… User/FrameID
  - 302 Password required
  - Frame sends pword…. Xxxxxxxx (this password may be dynamically generated. How would we want to do it, if it is dynamic?) (we own ftpd on server)

C 0129

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461. Note that the question "How do we want to do it, if it is dynamic?" is a question from Ben Croy ("bennie"), who was apparently the person taking notes at the meeting, to Mr. Schiller and Mr. Yanover asking which way they would want to generate a dynamic password if they chose to implement a dynamic, as opposed to a static, password.

462. Dependent claim 17 adds the element to claim 1 that the computer readable instructions "*comprise instructions for causing said apparatus to receive authentication information from said server system*." Mr. Schiller and Mr. Yanover's conception that the software of their digital picture frame included software to cause the digital picture frame to receive authentication information from their server system is corroborated, for example, by the following excerpts from DS Exhibit 3, which describe some exchanges of communications between their digital picture frame and server system during which the digital picture frame receives authentication information in the form of an "authentication file" from their server system:

Package Formats:

- Package number one is authentication file from server to frame for verification of server
- Package number two is metadata file from frame to server
- Package number three is bundle of goods from server to frame
- Package number four is clock tick package from server to frame

463. Dependent claim 20 adds the element to claim 1 that "*said updated computer readable instructions comprise instructions for adding new functionality to said apparatus*."

Mr. Schiller and Mr. Yanover's conception that updated software received from their server system can add new functionality to the digital picture frame is corroborated, for example, by the following excerpts from DS Exhibit 2, which shows that the updated software included "program upgrades." In the 1999 time frame, the term "upgrade" was understood to mean "a new or enhanced version of a product," as compared to an "update," which was understood to include "relatively minor new features." *See, e.g.*, Microsoft Computer Dictionary, Fourth Edition, 1999, pp. 460-461.

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11. Device should self-initialized out of the box by calling a pre-programmed 800 number to obtain set up and control information.
12. Device should have an auto-dim feature.
13. Device packaging should be as simple as possible and be able to be packaged into at least 6 different frame types.
14. Devices phone connection should not interfere with user calls on the same telephone line.
15. Device should support remote program upgrades.
16. Future version of the device should support Ethernet access.

C. Diligent Reduction to Practice

464. The inventions of the '573, '930 and '562 Patents were constructively reduced to practice on December 10, 1999, the filing date of the patent application for the '573 Patent, of which the '930 and '562 Patents are continuations.

465. It is my understanding that the inventions of the '573, '930 and '562 Patents were also actually reduced to practice by March 2000, when Mr. Schiller and Mr. Yanover released a commercial embodiment of their digital picture frame called "Ceiva" that embodied the Asserted Claims of the '573, '930 and '562 Patents. Expert Report of Prof. Stephen A. Edwards, Ph.D Regarding Infringement of U.S. Patent Numbers 9,203,930; 9,124,656; 9,654,562; and 6,442,573 dated August 24, 2023, pp. 340-368; *see also* Ceiva-A 00011248-00011249.

466. In my opinion, the exhibits to the 2013 Declaration show that between September 16, 1999, and December 10, 1999, Mr. Schiller and Mr. Yanover worked diligently and

continuously on a daily basis to reduce their digital picture frame and server system, which I understand incorporated the inventions of the '573, '930 and '562 Patents, to practice by releasing a commercial product and website. From the time of conceiving the inventions, the exhibits show that they were intent on bringing their digital picture frame and website to market in time for the 1999 Christmas holiday season. In their fervent effort to achieve that goal, Mr. Schiller and Mr. Yanover and their team of engineers were frantically trying to reduce the inventions to practice by mid-December 1999.

467. Reducing the inventions to practice required designing and constructing the custom hardware and software components that are used to implement the inventions, as well as selecting and acquiring off-the shelf components and services that needed to be combined with the custom components to implement the system of the inventions. Components of the inventions include the frame, the server system, the user interface and the network (which required selecting internet and network communications service providers to provide the network to be used in the system of the invention as claimed).

468. As mentioned, one component of the claimed inventions is the digital picture frame. To reduce the frame to practice, Mr. Schiller and Mr. Yanover developed a design specification for the frame. They then identified and hired an electronic component design company to make a working, physical frame for them pursuant to their frame design specifications, which involved creating both hardware and software. Based on their requirements, the electronic component design company, named Doctor Design ("DD"), prepared a projected schedule for completing the frame hardware. DD was also tasked to undertake the frame hardware design itself. The schedule is found in DS Exhibit 2, pages 6 and 7. The software design for the frame was tasked to Mr. Schiller and Mr. Yanover, along with a software programmer named Ben Croy ("BC") who they

hired to assist them with the software programming effort. The schedule of DS Exhibit 2 indicates a proposed start date of August 16, 1999, and a proposed finish date of December 6, 1999. It includes both frame hardware design and software design activities and specifies continuous reduction to practice design activities for that work between August 16, 1999, and December 6, 1999.

469. That work set forth in the proposed schedule proceeded diligently in accordance with that schedule. DD completed its hardware design work according to the schedule of DS Exhibit 2 and delivered a completed design and prototype frame by the scheduled deadline of December 6, 1999.

470. DD assigned job numbers to the frame design work and the frame prototype construction work, and provided separate invoices for those jobs. The design work was assigned job number "SCH02" (for "Schiller, job 2"). The prototype work was assigned job number "SCH02P" (for "Schiller, job 2, prototype"). DD sent weekly invoices to Mr. Schiller that detailed the number of hours spent by their various designers for the design work. They also sent separate invoices for the prototype construction work. Attached as DS Exhibit 5 to the 2013 Declaration are copies of those weekly invoices that Mr. Schiller located for the design work for the time period between September 20, 1999, and December 5, 1999, except for the week of October 4-10. Although Mr. Schiller did not locate that particular invoice, the DD design work for that week is corroborated by other corroborating evidence in paragraph 475 below. The invoices specify by name the DD employees who worked on designing the frame hardware, and the hours actually worked by each such employee, on a weekly basis. The table below summarizes the weekly person-hours spent by DD in designing the frame for Mr. Schiller and Mr. Yanover during this period. As shown in the table, an average of more than 200 person-hours per week were spent

during the time period between September 20, 1999, and December 5, 1999, for the hardware development of the frame component of the inventions as claimed in the Asserted Claims:

Week	Man-Hours	Invoiced Amount ($)	Invoice No.	Document No.
9/20/99-9/26/99	265.75	35,545.00	990929T-IN	C0501-C0502
9/27/99-10/03/09	210.00	30,140.00	991005U-IN	C0514-C0515
10/4/99-10/10/99			Missing	
10/11/99-10/17/99	254.00	36,655.00	991020U-IN	C0556-C0557
10/18/99-10/24/99	236.50	33,735.00	991026Q-IN	C0567-C0568
10/25/99-10/31/99	203.25	29,110.00	991031S-IN	C0578-C0579
11/1/99-11/7/99	208.50	29,947.50	991109S-IN	C0623-C0624
11/8/99-11/14/99	176.00	20,907.25	991117T-IN	C0682-C0683
11/15/99-11/21/99	254.00	36,345.00	991123U-IN	C0693-C0694
11/22/99-11/28/99	160.50	23,400.00	991130T-IN	C0725
11/29/99-12/05/09	249.50	36,005.00	991208U-IN	C0766-C0767

471. Although Mr. Schiller was unable to locate the DD invoice for the frame design work for week of October 4-10, 1999, he was nevertheless able to locate work details for the frame prototype work that actually occurred during that week. Attached as DS Exhibit 6 (C0541-C0545) to the 2013 Declaration are work detail reports from DD showing that 30 Man-Hours of work were done on the frame prototype during the week of October 4-10, 1999.

472. Attached to the 2013 Declaration as DS Exhibit 7 are the separate invoices DD sent to Mr. Schiller for the frame prototype work. Those invoices show the Man-Hours spent on the frame prototype design implementation work, which are summarized from those invoices in the table below:

Invoice Date	Man-Hours	Invoiced Amount ($)	Invoice No.	Document No.
9/30/99	42.50	12,503.79	99P930F-IN	C0486

Invoice Date	Man-Hours	Invoiced Amount ($)	Invoice No.	Document No.
10/22/99	101.25	17,185.88	99P102A-IN	C0525
10/31/99	96.50	21,503.24	99P103K-IN	C0590
11/19/99	66.75	13,218.21	99P118B-IN	C0664
11/30/99	85.50	16,884.96	99P113G-IN	C0703
12/10/99	41.75	7,452.71	99P121B-IN	C0777

473. Between December 6, 1999, and December 13, 1999, DD worked together with Mr. Schiller and programmer BC to continue to integrate the software and hardware for the frame component of the inventions. Their goal was to have fifty working frame device units available to show to the press by December 13, 1999. Attached to the 2013 Declaration as DS Exhibit 8 (C0981-C0984) is a weekly status report from DD dated December 4, 1999, that summarizes the progress to date and outlines tasks for the week of December 6, 1999, through December 13, 1999.

474. The integration of software and hardware and testing of the frame proceeded between December 6 and December 13, 1999, as set forth in DS Exhibit 8. Attached to the 2013 Declaration as DS Exhibit 9 (C0985-C1014) are a series of email exchanges between BC and DD documenting the work done on testing and integrating the frame software with the frame hardware between December 7, 1999, to December 13, 1999.

475. In parallel to developing the frame during the period between September 16, 2009, and December 10, 2009, Mr. Schiller and Mr. Yanover, and others working under their direction, were busy developing the web server, network communications system, and databases that were needed to reduce their inventions to practice. Where possible, they used existing and available components and services. However, practically all of those required modification to be used in reducing their inventions to practice. Attached to the 2013 Declaration as DS Exhibit 10 are some of many emails dated between September 16, 2009, and December 10, 2009, that identify some of

the many tasks Mr. Schiller and Mr. Yanover and their team were diligently working on during this period to reduce the inventions to practice. There were innumerable tasks that needed to be performed, and that were in fact performed, in an ongoing and urgent effort to reduce the inventions to practice, as shown and corroborated by the e-mails of DS Exhibit 10. The following list summarizes some of the reduction to practice activities that are further documented by the emails of DS Exhibit 10:

1. **Week of Sep 12 to 18, 1999**

- Mr. Schiller, Mr. Yanover and Hans Ku further discussed the display for the frame and Cirrus Logic processor frame component issues [C 0006, C 0009].
- Mr. Schiller authorized DD to purchase hardware development tools [C 0008, C 0159] and followed up with DD on the processor packaging issue, and about whether Cirrus Logic might customize the processor for their future needs [C 0072]. DD sent Mr. Schiller and Mr. Yanover a weekly status report [C 0160-0163].
- Mr. Schiller and Mr. Yanover scheduled meetings with potential Internet service providers (through their assistant Tia Mell) [C 0322], and they discussed their meeting with Cirrus Logic regarding frame processor samples [C 0073, C 0074].
- Guidance Solutions contacted Mr. Schiller to schedule a meeting to discuss an NDA relating to web development services for the website to be used with the inventions [C 0089-0091].
- BC circulated a product design document for the frame software [C 0142].
- Mr. Schiller and Mr. Yanover submitted a purchase order to American IC Exchange for 68,000 Sharp display panels and inverter boards for the frame [C 0068].

2. **Week of Sep 19 to 25, 1999**

- BC circulated updated versions of the design document for the frame software [C 0143, C 0128-0141, C 0168-0176]. Chris Blake of DD submitted its comments on the design document [C 0177-0179].

- Sharp Electronics discussed its price quote for 2500 display panels with us [C 0010, C 0337, C 0379]. Mr. Schiller and Mr. Yanover submitted a revised display panel purchase order to American IC Exchange [C 0067].

- USWeb referred us to WebEasy and eLogic [C 0094]. WebEasy scheduled a meeting with Mr. Schiller and Mr. Yanover to discuss development of their website to be used with the inventions [C 0095].

- Mr. Schiller and Mr. Yanover met with Starnet and Megapop to discuss Internet service for the frames [C 0323]. Starnet sent us their service rates [C 0324].

- DD provided Mr. Schiller and Mr. Yanover with its weekly status report [C 0164-0167].

- Altocom proposed a software modem licensing fee [C 0358-0359].

- Bager Sales sent supply information and pricing information for server parts [C 0380].

3. Week of Sep 26 to Oct 2, 1999

- WebEasy followed up on their meeting [C 0097] and Mr. Schiller and Mr. Yanover discussed website development [C 0013, C 0098].

- DD discussed certain implementation issues for the frame with us [C 0011-0012, C 0180-0183, C 0185], and sent Mr. Schiller and Mr. Yanover its weekly status report relating to the frame development [C 0190-0193].

- BC provided Mr. Schiller and Mr. Yanover with a status update of DD's progress on the frame development and implementation [C 0184, C 0194-0195].

- Altocom confirmed their selection of their software modem for use in their frame, and Altocom began preparing a license agreement [C 0014-0016, C 0360-0368].

- PacificNet discussed backend server implementation details with Mr. Schiller and Mr. Yanover for the server system to be used with the inventions [C 0187-0188].

- Hans Ku provided Mr. Schiller and Mr. Yanover with test images for the frame [C 0196].

4. Week of Oct 3 to 9, 1999

- Mr. Schiller and Mr. Yanover discussed working with eLogic [C 0099, C 0342] to implement a database server system [C 0344]. Mr. Schiller and Mr. Yanover met with eLogic to discuss the backend database server implementation [C 0344-0345].

- BC provided Mr. Schiller and Mr. Yanover with a brief software status report [C 0197].

- Altocom provided Mr. Schiller and Mr. Yanover with a proposed software license agreement [C 0369].

- Hans Ku sent eLogic a link to the sample LiveFrame.com website [C 0343].

- DD discussed possible custom modifications to the frame processors with Cirrus Logic [C 0077-0079] and sent Mr. Schiller and Mr. Yanover a weekly status report [C 0198-0201].

5. Week of Oct 10 to 16, 1999

- Altocom engineers helped Mr. Schiller and Mr. Yanover with technical issues and informed Mr. Schiller and Mr. Yanover that they would send test software for the modem software for the frame once Mr. Schiller and Mr. Yanover signed the license agreement [C 0023-0024, C 0203-0204, C 0370-0373]. Mr. Schiller and Mr. Yanover sent them a purchase order for their license and support fees [C 0069] and finished negotiating the license agreement for the modem software [C 0205-0206, C 0374-0375].

- Mr. Schiller and Mr. Yanover met with DD to discuss technical issues concerning the frame design [C 0202].

- DD sent Mr. Schiller and Mr. Yanover Qtron's bill of materials for the frame devices [C 0042]; Mr. Schiller and Mr. Yanover also sent First Rep a purchase order for 10,000 Epson LCD controllers [C 0070].

- BC sent Mr. Schiller and Mr. Yanover a summary of their meeting with eLogic [C 0346] and confirmed that Altocom's software was available for download [C 0376].

- Hans Ku continued working with eLogic on the prototype website [C 0347].

6. Week of Oct 17 to 23, 1999

- DD sent Mr. Schiller and Mr. Yanover a weekly status report concerning the frame design implementation [C 0207-0209]. Mr. Schiller and Mr. Yanover met with them on Wednesday [C 0211].

- Qtron requested a meeting with Mr. Schiller and Mr. Yanover in San Diego [C 0025]. Mr. Schiller confirmed that they would meet the following day [C 0025].

- BC worked on getting DD access to various Internet dialup accounts for product testing [C 0210].

- Paul Yanover followed up with Altocom on the modem software license agreement [C 0377-0378].

- Mr. Schiller and Mr. Yanover met with Bright Design on Thursday [C 0331].

- PacificNet discussed backend server software implementation details with Mr. Schiller and Mr. Yanover [C 0028, C 0348].

- BC reported on their backend server configuration options and dialup phone number costs [C 0037-0038, C 0326].

- DD discussed technical details regarding the display panel controller with Sharp [C 0036, C 0340-0341] and sent Mr. Schiller and Mr. Yanover an update on prototype production [C 0212].

- Hans Ku discussed test images for the frames with DD [C 0227].

7. Week of Oct 24 to 30, 1999

- DD sent Mr. Schiller and Mr. Yanover an update on the frame prototypes and design drawings [C 0213] and sent Mr. Schiller and Mr. Yanover a weekly status report relating to the frame design [C 0214-0217, 0223-0226].

- BC reported on the most recent meeting with eLogic regarding development of the backend database server system [C 0351].

- Sharp responded to DD, who provided the technical information to Mr. Schiller and Mr. Yanover [C 0035, C 0339-0341].

- DD discussed custom processor options with Cirrus Logic [C 0218-0222].

- BC discussed product assembly and forwarded a comprehensive status report on their product design, implementation, and logistics [C 0033-0034].

- Hans Ku discussed test images for the frames with DD [C 0227].

8. Week of Oct 31 to Nov 6, 1999

- DD discussed an upcoming meeting with Cirrus Logic and Mr. Schiller and Mr. Yanover [C 0080-0082].
- Mr. Schiller followed up with BC on the outsourcing information [C 0030, C 0031], status report [C 0033], and backend server configuration [C 0037].
- Mr. Schiller and Mr. Yanover discussed the display panel controller issue with DD [C 0035, C 0339].
- DD notified Mr. Schiller and Mr. Yanover of its success in getting a frame to transfer files via the Internet [C 0228], sent Mr. Schiller and Mr. Yanover a weekly status report [C 0229-0232], and sent them updated design drawings [C 0233].
- Hans Ku discussed sales software licensing with eLogic [C 0352] and demonstrated design mockups to Mr. Schiller and Mr. Yanover [C 0100].

9. Week of Nov 7 to 13, 1999

- DD sent Mr. Schiller and Mr. Yanover additional design drawings [C 0234, C 0238], identified a technical shortcoming with the display panels' brightness [C 0236-0237], and sent Mr. Schiller and Mr. Yanover a weekly status report [C 0245-0247].
- BC updated Mr. Schiller and Mr. Yanover on technical implementation issues for the frames [C 0239-0242].
- DD arranged a meeting to discuss technical issues [C 0239, C 0241].

10. Week of Nov 14 to 20, 1999

- Mr. Schiller and Mr. Yanover met with eLogic regarding development of the backend database server system [C 0353].
- DD discussed manufacturing samples with Mr. Schiller and Mr. Yanover [C 0249] and reported prototype test results [C 0250, C 0252-0253].
- Mr. Schiller and Mr. Yanover met with DD and Xerox to discuss manufacturing [C 0243] and parts availability [C 0251]. BC reported on the meeting [C 0254].
- Doctor Design sent Mr. Schiller and Mr. Yanover tooling information and drawings for the frame enclosure [C 0043, C 0257]. DD reported on their visit to Global Testing, an FCC certification lab [C 0045-0046, C 0258].

11. Week of Nov 21 to 27, 1999

- Mr. Schiller forwarded Qtron's bill of materials Cirrus Logic [C 0042].
- Mr. Schiller distributed DD's tooling information [C 0043].
- DD forwarded the Global Testing report to Mr. Schiller and Mr. Yanover [C 0045, C 0258], along with more FCC testing details [C 0263], updated design drawings [C 0044, C 0259-0261, C 0269], and supply and manufacturing information [C 0264-0265, C 0267, C 0270]. Mr. Schiller discussed some changes to the design with them [C 0262].
- Mr. Schiller and Mr. Yanover met with DD to discuss project status [C 0266, C 0268] and they sent Mr. Schiller and Mr. Yanover a weekly status report [C 0271-0275].
- BC discussed implementation details of the database server system with eLogic [C 0354-0355]. He reported that he allocated toll-free phone numbers for frame configuration and technical support [C 0327].

12. Week of Nov 28 to Dec 4, 1999

- DD provided Mr. Schiller and Mr. Yanover the full system bill of materials [C 0277], the most recent FCC and UL testing costs [C 0278], and an update on the backend server implementation [C 0356].
- BC provided Mr. Schiller and Mr. Yanover a comprehensive update on the project status [C 0328], including an update on their Internet service preparations with Ziplink [C 0329].
- DD provided Mr. Schiller and Mr. Yanover updated design drawings, a new quote for frame enclosure production [C 0047, C 0048], and more FCC testing information [C 0279]. DD reported that the boards passed FCC testing [C 0281] and reported on the software development status [C 0282].
- Xerox confirmed that they would produce the circuit boards in volume [C 0102-0103].
- DD sent Mr. Schiller and Mr. Yanover a weekly status report [C 0292-0295].

13. Week of Dec 5 to Dec 11, 1999

- Xerox quoted Mr. Schiller and Mr. Yanover their price for the circuit board production [C 0104-0112].
- BC and DD discussed the software fixes that remained to be done [C 0144].

- DD reported the FCC testing status [C 0287].
- BC reported that the toll-free internet configuration phone number was functional [C 0330].
- DD provided Mr. Schiller and Mr. Yanover an update on UL listing costs [C 0049, C 0290] and updated design drawings for the frame enclosure [C 0050-0051, C 0288-0289, C 0291].

476. In my opinion, Mr. Schiller and Mr. Yanover's work was reasonably continuous and diligent in reducing the inventions of the '573, '930 and '562 Patents to practice. As set forth in the 2013 Declaration, and as evidenced and corroborated by the exhibits thereto, between September 16, 1999, and December 10, 1999, co-inventors Mr. Schiller and Mr. Yanover, together with the companies and individuals that they hired and engaged on their behalf, spent hundreds of Man-Hours each week during that relevant period in reducing to practice their inventions of the '573, '930 and '562 patents which they had conceived on or before September 16, 1999.

X. SECONDARY CONSIDERATIONS

477. I have been asked to evaluate the existence of secondary considerations of non-obviousness with respect to the Patents-in-Suit. I understand that indicia of non-obviousness include: (1) whether there was a long-felt need for the claimed invention; (2) whether the claimed invention has achieved commercial success; (3) whether there was copying of the claimed invention by others; (4) whether there were failed attempts by others to make the alleged invention; (5) whether there was praise of the invention in the field; and (6) whether there was skepticism the claimed invention could be achieved, among a few others. I understand that secondary considerations may often be the most probative and cogent evidence in the record.

478. I also understand that, to establish non-obviousness using secondary considerations, there must be a connection, or nexus, between the evidence regarding the above factors and the asserted claims.

A. Substantial Industry Praise Related to the Patented Features

479. The Ceiva frame product released in March 2000 ("Ceiva Frame"), which I understand is an embodiment the invention of the '573, '930, and '562 Patents,[42] received widespread industry praise stemming from the patented features of the invention. The praise received is indicative of both the novelty and importance of the Patents-in-Suit. That is especially true considering that such widespread industry praise came from leading newspapers, technical journals, television news, influential and luminary users, and from Amazon itself. The examples of widespread industry praise included herein are illustrative, but not exhaustive of the widespread industry praise that the Ceiva Frame received.

480. One example of such industry praise is a television interview that on CNN:

ED CURRAN, "TECHNOGADGET GUY": Hi, good afternoon.

You know, one of the great things about digital cameras is that they take photographs that you can send anywhere. You know, they're very portable.

When you take a regular photograph, you can put it into your computer and you can manipulate it, make it look great, and then you can e-mail it to people, which is wonderful.

Well, what these photo picture frames do is they allow you to send photos to anybody, and it's just amazing. You can see the quality of the one that you have there in Atlanta.

This first frame here is from **Ceiva**, and let me explain how it works here. All you do is get this picture frame for $250. It plugs into a telephone line and it plugs into the wall, and you're done.

You give it to grandma and grandpa, who live in Arizona. You're in Atlanta or you're here in Chicago, and you take pictures with your digital camera. When you're done taking your pictures, you put them up on the Internet. Then this photo frame right here goes on the Internet every night by making a local phone call in most cases, and it grabs the photos you put up. So it's a constantly changing picture frame in grandma and grandpa's house that has the latest digital images, up to 10 of them on here, of the grandkids doing whatever they do that day. It updates itself.

WATERS: How complicated -- how complicated is this going to be for grandma and grandpa, **Ed**?

CURRAN: Oh, just plug it in the wall, just plug it in the phone line and forget about it. It's all set to go. And then if you're uploading the pictures, you have a special site -- and you have to subscribe to this; it costs about $8 a month, a little bit less if you buy it for the whole year -- and you load all your pictures up on the site and you say here are the 10 pictures I want sent to grandma and grandpa.

CEIVA_3P_000002-000006 at CEIVA_3P_000005.

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[42] It is my understanding that although the Ceiva Frame did not embody the invention of the '656 patent because it lacked the claim element of including "instructions for causing said display device to instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device," it still included all of the other elements of the asserted claims of the '656 patent. Dr. Stephen Edwards addressed this issue in more detail in his Infringement Report. *See* Section 7.4 of Professor Edwards' Infringement Report entitled "Ceiva's Commercial Embodiments of the Asserted Patents."

481. As discussed in the above television segment, the industry praise centered around the ability to simply "plug" the Ceiva frame "into the wall," and images that have been uploaded to the repository ("put . . . up on the Internet") are then automatically provided to the Ceiva frame (the Ceiva frame "grabs the photos") making it easy for less-tech savvy users ("grandma and grandpa") to use the Ceiva frame ("plug it in . . . and forget about it" and "it updates itself").

482. Another example of industry praise can be found in the November 22, 2002 review of the Ceiva Frame, published in the Massachusetts Institute of Technology newspaper, *The Tech*, volume 122, issue 58:

Gadget Review

Ceiva Digital Photo Receiver

By Kailas Narendran
STAFF WRITER

As our world spins into a digital cataclysm, those silver-haired wonders we call grandparents (and sometimes parents) are left behind the technological divide.

Despite the best laid plans of software giants, I don't really see many seniors leaving their comfort zone, embracing and leveraging opportunities presented by the internet. It seems like when you become a grandparent (or a retired parent), the only thing you love more than golf and sunshine are your offspring.

The million-dollar question is how to keep in touch with your beloved elders — without buying tickets to Florida, sending snail mail, or making those calls before their bedtime of 8 p.m. The folks at Ceiva have answered the call with their Digital Photo Receiver.

Internet enabled photo frame

The Ceiva Digital Photo Receiver is a brilliant solution to the perfect problem of this age. I like to call it an "Internet enabled photo frame." The unit, with a subscription to the service, allows you to send digital pictures to the frame through the Internet.

Every night, the unit uses a standard phone line to access a local dial-up number to keep its collection of pictures up to date. The beautiful part is that it requires almost no technical knowledge from the person that is using the receiver.

Right out of the box, the device looks like a nicely matted 4-inch-by-6-inch picture frame.

What I liked most about this product was the simple installation. All the recipient has to do is plug in the phone line, plug in power, and hold down the white button on the back of the unit.

Upon initial power up, the LCD lights up as the unit calls a toll free number to download its configuration information, entered through the Ceiva Web site with a subscription to the service. From that point onward, the device calls a local number to automatically download new images every night.

This device is an amazing blend of various technologies that push the burden of knowledge onto the giving party, who is responsible for uploading pictures to the frame via the Web, and for configuring the device. I think the design of the control Web site is a bit cluttered, but with a little searching you can find everything important. In the end, however, the ease of use of the control site isn't as important as the ease of use of the receiving frame, since the "administrator" of the frame, if you will, can be someone who is comfortable navigating the Web.

Remotely administering frame settings

From the Web site you can control which pictures are showing on the frame, settings such as slideshow pause time, what time of the day the frame turns off, dial-up numbers, and a number of other settings. In addition, you can tweak pictures and add custom messages and borders to them. You can even schedule when pictures are actually sent to the frame, creating a unique substitute for greeting cards.

The individual who controls the subscription can also invite anyone with an e-mail address to send pictures to the frame as well, providing an easy interface to a group gift.

I have to say that I was very impressed with almost all aspects of this system. The demo frame I received was actually pre-configured from the factory. When I plugged it in and pressed the button, it actually gave me error messages saying it couldn't connect to the local dial-up. As the helpful technical support people were trying to figure out what was wrong, the frame figured it out itself (it was configured for a California dial-up number), and redialed the main 800 number, reconfigured itself, and started working fine. Needless to say, I was impressed with the robustness of the system.

Unit operator interface remarkably simple

The operator interface on the frame itself consists of only two buttons: a brightness button on the back, and a white button that forces a reconnect. The LCD on the frame isn't as sharp as a computer monitor, but it does a decent job. The viewing angle is about 15 degrees up and down, and about 45 degrees to either side, perfect for desk use.

Another amazing aspect of this whole setup is the cost. You can buy a new frame through the Ceiva Web site for $150, but I've found them online for as low as $100. The cost of service varies from $5 to $8 per month, depending on how long you sign up for. I'm not sure how they do it, but all of this seems like a great deal to me. For more details about the system, check out *<http://www.ceiva.com>*.

—CEIVA LOGIC, INC.
The Ceiva Digital Photo Receiver downloads digital images directly from the internet.

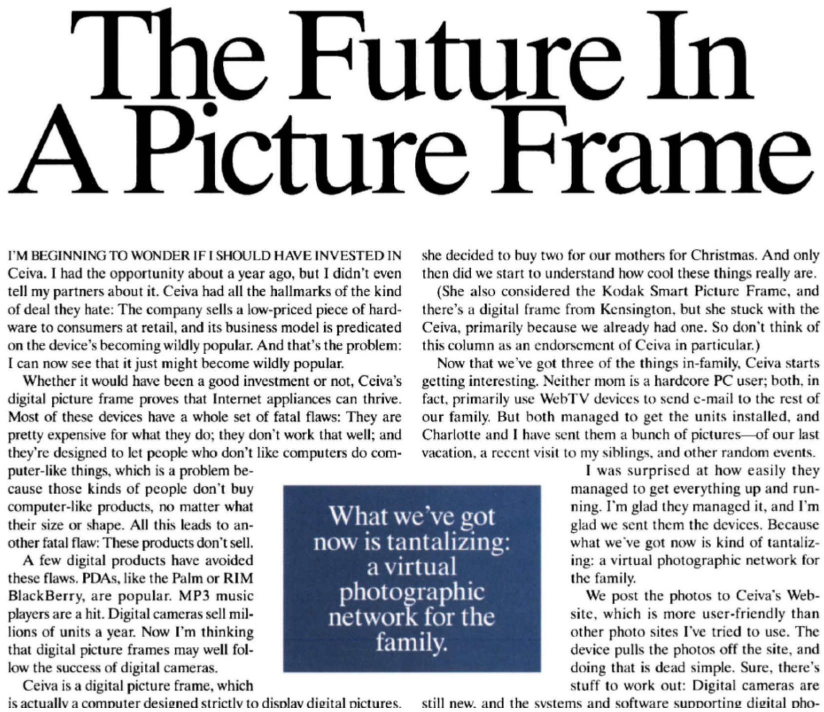
CEIVA_3P_000008-000010 at CEIVA_3P_000010.

483. The following excerpts from *The Tech* review illustrate the author's praise of the Ceiva product:

- "The Ceiva Digital Photo Receiver is a brilliant solution to the perfect problem of this age."
- "The unit, with a subscription to the service, allows you to send digital pictures to the frame through the Internet."

- "What I liked most about this product was the simple installation. All the recipient had to do is plug in the phone line, plug in power, and hold down the white button on the back of the unit" and "[u]pon initial power up" "download its configuration information" and "automatically download new images every night."

484. Another example of such industry praise is an article published in Fortune magazine in March 2001. An excerpt from that article is shown here:



The Future In A Picture Frame

I'M BEGINNING TO WONDER IF I SHOULD HAVE INVESTED IN Ceiva. I had the opportunity about a year ago, but I didn't even tell my partners about it. Ceiva had all the hallmarks of the kind of deal they hate: The company sells a low-priced piece of hardware to consumers at retail, and its business model is predicated on the device's becoming wildly popular. And that's the problem: I can now see that it just might become wildly popular.

Whether it would have been a good investment or not, Ceiva's digital picture frame proves that Internet appliances can thrive. Most of these devices have a whole set of fatal flaws: They are pretty expensive for what they do; they don't work that well; and they're designed to let people who don't like computers do computer-like things, which is a problem because those kinds of people don't buy computer-like products, no matter what their size or shape. All this leads to another fatal flaw: These products don't sell.

A few digital products have avoided these flaws. PDAs, like the Palm or RIM BlackBerry, are popular. MP3 music players are a hit. Digital cameras sell millions of units a year. Now I'm thinking that digital picture frames may well follow the success of digital cameras.

Ceiva is a digital picture frame, which is actually a computer designed strictly to display digital pictures.

she decided to buy two for our mothers for Christmas. And only then did we start to understand how cool these things really are.

(She also considered the Kodak Smart Picture Frame, and there's a digital frame from Kensington, but she stuck with the Ceiva, primarily because we already had one. So don't think of this column as an endorsement of Ceiva in particular.)

Now that we've got three of the things in-family, Ceiva starts getting interesting. Neither mom is a hardcore PC user; both, in fact, primarily use WebTV devices to send e-mail to the rest of our family. But both managed to get the units installed, and Charlotte and I have sent them a bunch of pictures—of our last vacation, a recent visit to my siblings, and other random events.

What we've got now is tantalizing: a virtual photographic network for the family.

I was surprised at how easily they managed to get everything up and running. I'm glad they managed it, and I'm glad we sent them the devices. Because what we've got now is kind of tantalizing: a virtual photographic network for the family.

We post the photos to Ceiva's Website, which is more user-friendly than other photo sites I've tried to use. The device pulls the photos off the site, and doing that is dead simple. Sure, there's stuff to work out: Digital cameras are still new, and the systems and software supporting digital pho-

CEIVA_3P_000078-000079 at CEIVA_3P_000079.

485. There are several significant statements of praise of the Ceiva Frame in that article, including:

- "The second thing that's cool is just that: It is ***easy to use***."
- "I was surprised at ***how easily they managed to get everything up and running***."
- "We post the photos to Ceiva's Website . . . [and] [t]he device pulls the photos off the site, and doing that is dead simple."
- "So now I'm beginning to think about making sure that everyone in my family has a picture frame…"

- "I'M BEGINNING TO WONDER IF I SHOULD HAVE INVESTED IN Ceiva." (capitalized in article)

486. As yet another example of industry praise, below is an excerpt from an article that appeared in The Gadgeteer in May 2002:

> Installation is ridiculously easy: You basically just plug
> the proper end of the power cord into the back of the Ceiva
> and then you run
> the phone cord from the Ceiva to either the dual phone jack or
> an empty
> phone jack.
> Once you have done this, you are then ready to register your
> frame, and begin receiving downloads via the modem. You can
> register your
> frame either through the Ceiva internet site, or by calling a
> toll-free
> number.

Ceiva-A 00008455-00008465 at Ceiva-A 00008457.

487. Notably, the author states "Installation is ridiculously easy: You basically just plug the proper end of the power cord into the back of Ceiva and then you run the phone cord from the Ceiva to either the dual phone jack or an empty phone jack."

488. The Ceiva Frame was also praised repeatedly by Walter Mossberg who was the Personal Technology Columnist for the Wall Street Journal for 22 years, from 1991 to 2013.[43] Mr. Mossberg also appeared in television news to discuss technology issues.[44] The Washington Post declared Mr. Mossberg "one of the most powerful men in the high-tech world."[45]

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[43] https://www.tedmed.com/talks/show?id=7089.

[44] https://charlierose.com/videos/30693; https://www.c-span.org/person/?13425/WalterMossberg.

[45] https://www.wsj.com/news/author/walter-mossberg.

489. Mr. Mossberg also discussed the Ceiva Frame in an article that appeared in the Wall Street Journal on February 3, 2000. An excerpt from that article is shown here, which references the Ceiva Frame as a "**pioneering product**."

This is no standard picture frame, though. It's a newly introduced electronic picture frame that connects to the Internet via any standard telephone jack. The frame automatically fetches up to 10 photos at a time from a special Web site, and displays them like a slide show. No Web knowledge or user intervention is required. It just works.

The magic picture frame is called the Ceiva, and it's made by Ceiva Logic, a Los Angeles start-up headed by former Disney executives. It went on sale last week for $249 on the company's Web site, www.ceiva.com, and at 1-877-myframe. In addition to the $249, users pay $36 a year for the online picture service that feeds the frame with images. No other Internet access account is needed.

. . .

This is a pioneering product, launching a whole new category of digital, Internet-enabled picture frames. Next week a company called Weave Innovations will unveil plans at the Demo 2000 technology conference for a costlier frame that can store up to 36 pictures and can send those pictures from one frame to another without a PC. Weave's frame will be sold this coming summer, in conjunction with Kodak.

CEIVA_3P_000086-000096 at CEIVA_3P_000089-000090.

490. Specific statements of praise in this article include the statement that "[t]his is a pioneering product, launching a whole new category of digital, Internet-enabled picture frames."

491. As previously mentioned, the author of the Wall Street Journal article is Walter Mossberg. Mr. Mossberg also appeared in television news[46] to discuss technology issues.

492. Following his Wall Street Journal review, Mr. Mossberg appeared on the "The Saturday Early Show" broadcast on April 8, 2000, to discuss the Ceiva Frame and the downfalls of the Sony CyberFrame. The following is an excerpt from the transcript of that program where Mr. Mossberg praised the Ceiva Frame:

[46] https://charlierose.com/videos/30693; https://www.c-span.org/person/?13425/WalterMossberg.

Mr. MOSSBERG: This is--this is a thing called the Ceiva. If you look, it's wood. It looks pretty much like a picture frame. But when you turn it around, you'll see it has a connection, a telephone line connection to the Internet...

MITCHELL: Right.

Mr. MOSSBERG: ...it has an electric power connection and just a couple buttons to control it.

MITCHELL: Wow.

Mr. MOSSBERG: And when these guys came to my office and asked me to write about it in my newspaper column, they said, `It's so easy, your mom can do it.' And I said, `Prove it. Send one to my mom.'

MITCHELL: And how did mom do?

Mr. MOSSBERG: Well, mom did pretty well, but I guess we can ask her.

MITCHELL: We can ask her. Look. Look who's here. It's Rhoda from Rhode Island. Hi, Rhoda. How are you?

RHODA: I'm fine. Thank you.

MITCHELL: What has your boy got you into here?

RHODA: He has me into wonderful things, all new inventions.

MITCHELL: Was it easy for you to set that up?

RHODA: Oh, it was very easy. Just plugged it in and into the phone line.

MITCHELL: And, Walt, these are pictures of your family. Various pictures of your family.

...

MITCHELL: Tell me about this one right here.

Mr. MOSSBERG: Well, this is an interesting, I think, moral about how start-up companies can sometimes be smarter than big ones. This is by Sony.

(Graphic on screen)

CyberFrame $899

Mr. MOSSBERG: It came out about a year ago. And this costs $900, Russ.

MITCHELL: Wow.

Mr. MOSSBERG: And it doesn't connect to the Internet. All you do with this--all you can do with this is if you have a Sony digital camera, shoot pictures. You take the little memory stick out of the camera and plug it in here and you can look at the pictures from the camera. To me, it's really pretty dumb for $900.

MITCHELL: That's it. And you told me the Ceiva company actually was started by two former Disney executives.

Mr. MOSSBERG: Yeah. A couple of guys from Disney quit and started this Ceiva company. And their product is now being sold on Amazon.com. This is another start-up. And these guys have a deal where Kodak is going to be selling this this summer with the Kodak brand, which is a pretty good deal for them.

CEIVA_3P_000018-000076 at CEIVA_3P_000028-000030.

493. Mr. Mossberg also appeared on CNBC's "Power Lunch" segment to discuss the benefits of the Ceiva Frame. *See* Ceiva-A 00009194.

494. Following the release of a later model of the Ceiva Frame, Mr. Mossberg again praised the Ceiva Frame in a December 1, 2004 Wall Street Journal article. An excerpt from that article is shown here:

> The coolest thing about the Ceiva is how the digital photos get into it. Unlike some other digital frames, the Ceiva isn't fed by plugging in memory cards or connecting cameras. It receives its photos via an automated Web connection. In fact, Ceiva owners don't need to know anything about the Internet or digital photography to use this device.
>
> For instance, you could give the Ceiva to grandparents with no PC or Internet service and feed it a constant stream of pictures by simply uploading them to Ceiva's servers using your own PC and Internet access, even if you are thousands of miles away from the Ceiva Receiver where you want them to appear.

CEIVA_3P_000086-000096 at CEIVA_3P_000094.

495. During an August 17, 2001 Oprah Winfrey Show,[47] Oprah, who said she is admittedly "low tech," reviewed the Ceiva Frame with high praise:

> It's called CEIVA, and you hook this up to your computer. All day long you can sit here and look at your pictures. Those are my pictures that I personally took in Africa, and then every five seconds it changes pictures. That's Gayle and her son on the elephant, back of the elephant. **It's unbelievable.** And then the fact that I can go from no-tech to low-tech in a year, is amazing. It's amazing.

CEIVA_3P_000099-000100; CEIVA_3P_000098.

496. A letter dated March 17, 2000 from President Clinton said "Thanks so much for the digital picture frame - I love it! I have it on my desk and am fascinated by it. Technology has come such a long way in a short time." Ceiva-A 00008624.

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[47] The Ceiva Frame was also featured on Oprah's "The O List" in the April 2001 edition of "The Oprah Magazine." Ceiva-A 00016976-Ceiva-A 00016980 at Ceiva-A 00016979.

497. In an e-book, entitled "99 Cows," author Seth Godin described how the innovative technology in the Ceiva Frame allowed him to share photos with his parents:

(76)

"LET ME TELL YOU ABOUT MY GRANDCHILDREN"

Visit my dad's office, and pretty soon you'll hear about the Ceiva picture frame on his desk. It looks just like a picture frame, but it has a wire out the back. That wire connects to the phone, and every morning at four, it dials out and downloads the latest digital photos that have been uploaded by my sisters and me.

By turning photographs from private scrapbooks into shared community property, Ceiva has created a remarkable new social mechanism. Users tell everyone they meet. The company's challenge isn't getting my dad to share the idea—it's finding the techie early adopters to take the plunge and buy one. In other words, the buyers and the users are different people, and the sneezers are busy talking to the wrong people. But as the Ceiva inexorably spreads, the power of shared pictures will dramatically accelerate the company's growth.

Ceiva-A 00011515-00011634 at Ceiva-A 00011607.

CONFIDENTIAL

498. The January 31, 2000 edition of Newsweek featured the Ceiva Frame in a column entitled "A Framework for digital Art:"

Display your digital pictures

GADGETS

A Framework for Digital Art

HAPPY WITH THOSE smudgy color laser prints of your digital pictures? Didn't think so. A Los Angeles-based company this week introduces the Ceiva, a photo frame, made of wood and glass, that contains a flat-panel VGA screen for viewing digital photography. Upload your pics to Ceiva.com, and the smart frame, which contains a tiny modem, dials out to the Web and fetches them for you on a nightly basis. The $249 frame stores up to 10 images at a pleasingly crisp resolution and can rotate them like a slide show.

GINANNE BROWNELL *in London*, ESTHER PAN *and* ELIZABETH ANGELL

Ceiva-A 00016996-00016999 at Ceiva-A 00016998.

499. The November 2004 Edition of Time Magazine featured the Ceiva Frame in a column titled "Phoning Home Your Photos:"

> Ceiva's latest LCD frame, the Digital Photo Receiver (ceiva.com; $150), can display pictures sent from camera phones as well as from e-mail or the Web. Take snapshots or find classics from your phone's gallery and then use the phone's menu to send them to the frame's specific, randomly generated CeivaMobile email address. At night, when the frame uses its internal modem to call in and download photos, it will retrieve the shots you sent and automatically display them on its 5-in.-by-7-in. screen. (If you don't want to wait overnight, you can push a button to download pictures immediately.) Don't worry about spammers or any unsavory types getting hold of the frame's address; in the unlikely event that does happen, you can go online and get a fresh address in minutes.

Ceiva-A 00016971-Ceiva-A 00016975.

500. In a December 2000 article entitled "Gadgets for the Technology Addict," the Ceiva Frame was described "as the gadget you have been waiting for." *See* Ceiva-A 00010570-Ceiva-A 00010571 at Ceiva-A 00010571.

501. A July 2000 Report from mPRm Public Relations, produced in this case at Ceiva-A 00016816-Ceiva-A 00016857, included a compilation of reviews/articles on the Ceiva Frame in the following publications (among others):

- Money Magazine (August 2000): "*Pixel perfect* If you take digital photos, how do you display your e-pictures on the mantel? You can boot up your PC every time someone asks to see your wedding pictures, **but a better option is the $250 Ceiva picture frame** (above). Already available at www.ceiva.com, the frame should be all over electronics stores this fall. Just post up to 1,000 photos at the site, plug in the frame and connect to the Net. The Ceiva retrieves up to 10 images, which you can view individually or as a slide show. The frame is a perfect gift for a technophobe: Once you set it up, all Mom or Dad has to do is press a button to see shots you've posted online. Service is $50 a year for the first year, $79 thereafter." (Ceiva-A 00016824)

- Playboy Magazine (August 2000): "If old-fashioned frames bore you, try an Internet-connected digital picture frame. Ceiva Logic's Ceiva has a five-by-seven inch screen and can store up to 10 images at a time." (Ceiva-A 00016825)

- FamilyPC (August 2000): "One of a new breed of internet appliances, the Ceiva looks like a regular picture frame but it connects to the Internet so you can upload the most up-to-date pictures from family and friends, (it's perfect gift for relatives who are always asking the latest photos of the kids.) Here's how it works: You send your digital images to Ceiva's Website, and anyone with access to your account and a frame can download the images. The frame, which needs to be plugged into an AC outlet and telephone jack, automatically displays the newest images—up to 10 in slide show fashion." (Ceiva-A 00016826)

- Smart Computing Guide Series Digital Home (August 2000): "The Ceiva picture frame offers a unique option for picture viewing. This black bordered, 5 x 7-inch picture frame can do something no frame has done before: connect to the Internet and download images, which the frame can then show as a slide show." (Ceiva-A 00016831)

- Horizon Air Magazine (July 2000): "You can send digital photos to non-wired relatives via a Ceiva Internet-Enabled Photo Frame." (Ceiva-A 00016839)

- Smart Money (July 2000): "Terrell Jones, President and CEO of Travelocity.com Ceiva Digital Picture Frame: Despite his travel connections, Jones doesn't get to see his parents as often as he might like. That's why he bought his mother, Barbara, a Ceiva, an electronic picture frame that automatically connects to the Internet and downloads digital photographs." (Ceiva-A 00016840)

- CIO Magazine (July 2000): "SUMMER'S HERE, and that means it's time to take lots of pictures. If you're like many, that also means making countless reprints to send to friends and family. But this year there's an alternative: Ceiva Logic, a Los Angeles-based technology company, has designed a Web-enabled picture frame that displays pictures electronically for loved ones without a computer . . . Sounds like a grandparent's dream come true." (Ceiva-A 00016846)

502. A May 2000 Report from mPRm Public Relations, produced in this case at Ceiva-A 00016923-Ceiva-A 00016970, included a compilation of reviews/articles on the Ceiva Frame in the following publications (among others):

- Staten Island Live Frame (May 3, 2000): "Frame of the Future" by Richard Ryan Advance Technology Editor: One of the standard jokes on old sit-coms involved family members learning that Aunt Minnie was coming for a visit and then running around the house and putting out the hideous vase that she had given as a wedding present and replacing some other relative's photo with her smiling countenance. Well, those days are over. Ceiva Logic introduced a digital picture frame that allows users to receive pictures over a phone line from a Website." (Ceiva-A 00016938)

- The Orange County Register: Parade (April 30, 2000): "Cool Gear for Mom: Consider giving Mom a digital picture frame for Mother's Day this year … Although you, the gift-giver, need Internet access to send photos to it, Mom doesn't. She simply plugs her Ceiva into a power outlet and a phone jack." (Ceiva-A 00016940)

- MSNBC.com (April 21, 2000): "If Mom is a technophobe, have no fear. The Ceiva is easier to use than a typical telephone answering machine. Just plug your Ceiva into an ordinary telephone jack and electrical outlet, and the frame automatically dials in to the Internet and downloads each night the photographs you've made available." (Ceiva-A 00016941)

- PC Magazine (April 18, 2000): "The concept is ingenious: Centered in an otherwise ordinary-looking 12-inch picture frame sits a 5-by-7-inch LCD screen, where a parade of up to ten digital images cycle continuously. Its ease of use makes the Ceiva ideal for sharing photos with relatives who don't have PCs. Using a Ceiva is also a good way for anyone with a PC to enjoy the images that are collecting digital dust on a hard disk." (Ceiva-A 00016945)

503. A March 2000 Report from mPRm Public Relations, produced in this case at Ceiva-A 00016890-Ceiva-A 00016922, included a compilation of reviews/articles on the Ceiva Frame in the following publications (among others):

- USA Today: Money (March 27, 2000): "Amazon.com plans to be the exclusive retailer of a picture frame that can receive up to 10 photos at a time sent over the Internet" (Ceiva-A 00016904)

- WWLTV.Com: "I couldn't resist telling you about one of the best "Grandma gifts" I've seen. It's called an *Internet enabled picture frame*, and it's sold by a company called Ceiva Logic" "It allows users to transmit digital images directly from the Web into an electronic picture frame, and it's the brainchild of two former Disney executives, Dean Schiller and Paul Yanover" "The Ceiva operates simply by connecting it into an AC outlet and telephone line" (Ceiva-A 00016905)

- PCWorld.com (March 13, 2000): boasting that "Ceiva Logic's Web-connected LCD picture frame sets out to revolutionize photo sharing" "You could keep sending snapshots to Grandma via snail mail—or you could buy her Ceiva Logic's $249 digital picture frame. With a built-in 33.6-kilobits-per-second modem, the device automatically downloads your photos from Ceiva's Web-based photo sharing service, without the assistance of a computer. Grandma, and anyone else with a Ceiva picture frame and your authorization, can then see up to ten of your pictures cycling continuously all day long. And when Grandma rises the next morning, she will find that those photos have been miraculously replaced by ten new ones." (Ceiva-A 00016911)

- Ocregister.com/connect: a Weekly Guide to Today's Technology Revolution (March 14, 2000): "21st-century frame: A personal Web page may be all the rage for sharing family photos, but booting up and logging on is a lot of work just to view an "awwwww"-worthy snapshot of Junior. Besides, PCs aren't designed for nightstands. But Ceiva Logic's digital photo frame does — a black 8 inch by 10-inch wooden frame surrounding a 4-inch by 6-inch LCD screen. The Ceiva plugs into standard electric and phone outlets. While you sleep, the frame dials in and downloads photos that you've uploaded from your PC into your password-protected library on

Ceiva's Website. In the morning, up to 10 new shots are displayed as a slide show that can freeze on one image at the touch of a button." (Ceiva-A 00016915)

- New York Post: Tech It Out (March 5, 2000): "So many photos of friends and family, so few picture frames? No problem, thanks to Ceiva, which looks like a standard picture frame but is electronic, with an LCD screen capable of displaying as many as 10 digital photos on a rotating basis. The device switches among your favorite snapshots every few seconds, with the time in between determined by you. Best of all, you can upload images from a digital camera or download them from loved ones over the Internet. The 7x5-inch screen's clarity is good, and it takes less than a minute to setup. All you have to do is plug in the power cord, connect a phone line to a jack in the back of the frame and press a white button, also on the back, for 10 seconds. Ceiva then makes a silent and short local call and you can start downloading images - 10 stock photos to begin with …" (Ceiva-A 00016920)

504. Beyond these third-parties that lauded the Ceiva Frame, Amazon itself praised the Ceiva Frame when it boasted in March of 2000 that it would be the exclusive retailer for Ceiva.[48]

Press release

Amazon.com Named Exclusive Retailer for New Internet-enabled Picture Frame Ceiva, Making Amazon.com the Best Place to Find and Discover the Hottest Electronics

March 27, 2000 at 8:31 AM EST

SEATTLE--(BUSINESS WIRE)--March 27, 2000--Leading online retailer Amazon.com (Nasdaq:AMZN) today announced that it will be the exclusive retailer -- online or off -- for what promises to be one of the hottest Internet appliances yet -- Ceiva.

Ceiva is the first-ever Internet-connected digital picture frame, which enables people to receive photos to a picture frame directly over a phone line. Amazon.com was selected by Ceiva to be the exclusive retailer of its revolutionary product.

Ceiva-A 00008440-00008443 at Ceiva-A 00008443.

48 [redacted]

505. Amazon's 8-K filing with the Securities and Exchange Commission in 2000 asserted that "Amazon.com's Electronics store was selected by Ceiva to be the exclusive retailer - online or off - of **its** revolutionary Internet appliance product. Ceiva is the first-ever Internet-connected digital picture frame, which enables people to receive photos to a picture frame directly over a phone line." AMZ_CEIVA00150582-00150595 at AMZ_CEIVA00150588.

506. Similarly, a Wall Street Journal Ad touted the Ceiva Frame as the "world's first Internet-connected picture frame" "available at Amazon.com:"

Ceiva-A 00008651.

507. In addition, I have reviewed a "draft" email dated April 4, 2000, to Amazon's first customers that reflects the signature block of Jeff Bezos, in which he called those first customers "pioneers" and boasted that the Ceiva Frame is a "pretty remarkable device."[49]

Subject: A special offer for long-time Amazonians

Dear Amazon.com Customer,

Did you know that you were one of the first 100,000 folks to come shop at Amazon.com? You're a pioneer. So when I heard about this new Internet-enabled photo frame from Ceiva, I immediately thought of you.

Ceiva is a pretty remarkable device. And we're the only retailer--online or off--who carries it. It's cool because it looks just like a wooden picture frame. Difference is, this frame lets you download digital photos and display them in full color. Just store your images in your account at www.ceiva.com--encourage your friends and family to do the same. Then plug your Ceiva frame into the phone line and it'll fill with smiles and snapshots of your favorite people. No Internet connection or computer needed.

Come learn all about it at: http://www.amazon.com/exec/obidos/ASIN/B00004SDFH

Since you're a long-time Amazon.com customer, if you decide to buy the Ceiva--we'll give you $25 off. You just have to be sure to let us know what you think of your new high-tech toy.

Again, thanks for discovering Amazon.com and helping make it a great place to shop.

Sincerely,

Jeff Bezos
Founder and CEO
Amazon.com

P.S. We hope this message was interesting to you. However, if you'd rather not receive any future notices of this sort from Amazon.com, please visit:

http://www.amazon.com/subscriptions

Ceiva-A 00009494-00009496.

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[49] I understand the Court previously denied the deposition of Mr. Bezos and issued a protective order to that effect on November 10, 2021 (Dkt. 166). I understand the Court stated that a later e-mail dated April 19, 2001 from Mr. Dean Schiller "implie[d] that the Jeff Email [the "pioneer" email excerpted above was not sent (at least of the alleged meeting at the TED conference)." *See* Ceiva-A 00021538 (April 19, 2001, Email from Mr. Schiller to Mr. Bezos: ("Jeff we spoke at TED about CEIVA . . . I believe your own experience is an honest and compelling story that reveals the wonderful side of our product"). I have also reviewed the deposition transcript of Mr. Schiller, during which Mr. Schiller explained that this later e-mail he sent to Mr. Bezos on April 19, 2001 was sent following an in-person discussion with Mr. Bezos at the TED conference and concerned an offer by Mr. Bezos to send yet *another* personalized email to customers. Schiller Tr. (Oct. 29, 2021) at 117-122. Mr. Schiller also testified that he saw a copy of the Jeff Email that was sent to customers. Schiller Tr. (Oct. 29, 2021) at 120 - 121.

508. I have also reviewed the video interview on CNN, a national broadcast, in 2000, in which Mr. Bezos exclaimed:

> Well, you know, we are working on driving toward profitability in each of our businesses and our businesses are in different parts of their life cycles. So our US books business, for example, was profitable in Q4. We have an internal goal of making our books, music and video businesses in the US as a group profitable by Q4 of this year. So we continue to work on this and we think it's the right thing to do to continue to invest in our new businesses, like electronics, like toys and tools and so on. **By the way, I would like to encourage all of your viewers to buy the Ceiva picture frame. It's really great!** That would help us with profitability."

Ceiva-A 00009195.[50]

509. In addition, I have reviewed documents showing that Mr. Bezos' mother and brother, Jacquie Bezos and Mark Bezos, had Ceiva Frame subscriptions. *See* Ceiva-A 00110398; Ceiva-A 00110399-400; Ceiva-A 00110401; Ceiva-A 00110402.

510. I have further reviewed documents related to an Amazon ad campaign for Mother's Day touting the benefits of the Ceiva Frame, boasting that "Amazon presents Ceiva. The first picture frame that receives photos from friends and family over the internet without a computer":

[50] In the Protective Order Denying Mr. Bezos' Deposition, I reviewed where the Court stated that Mr. Bezos' statements in the CNN interview did not specifically discuss the features of the Asserted Patents. Order (Dkt. 166). As discussed above, Prof. Edwards has opined that the Ceiva Frame is a commercial embodiment of the '573, '562, and '930 patents.

Ceiva-A 00106162-163; Ceiva-A 00106164; Ceiva-A 00056115; Ceiva-A 00056116.

511. A POSITA would recognize that the Ceiva product did not just receive widespread industry praise, but the praise came from noteworthy sources such as the Wall Street Journal, CNN, the New York Times, and even Amazon itself.

512. Ceiva was also discussed in a 2015 Article by Vinton Cerf: Prospects for the Internet of Things:

> The phrase "Internet of Things" (IoT) is used to refer to devices that house computing and communication capacity, are capable of being linked to the Internet, and are controlled, or at least monitored, remotely. Another term associated with the concept is cyber-physical systems. In principle, such devices have been emerging for over a decade, and perhaps as many as two decades, concurrent with the rapid growth of the World Wide Web. Fifteen years ago, I encountered the first digital picture frame from CEIVA. Yet, the first toaster connected to the Internet was implemented in 1990 and shown at the INTEROP exhibition. An idea that had been the subject of humor in the Internet Engineering Task Force community for years: "Someday, toasters will be on the Internet!"

Ceiva-A 00008613-00008616 at Ceiva-A 00008613.

513. The opinion of Vinton Cerf is important. Vinton Cerf is often called the "Father of the Internet." He was one of the designers of the TCP/IP protocols and the architecture used on networks including the internet.[51] He is recipient of the ACM Turing award[52] that is sometimes called the "Nobel Prize of Computer Science."[53] He has been given awards from Presidents Clinton and Bush.[54]

514. As I described in Section VI summarizing the Patents-in-Suit, the Patents-in-Suit included the features commonly praised throughout all the above evidence (easy setup/configuration, separable user interface to provide photos so non-tech-savvy users do not have to figure out how to provide photos, automatic image retrieval, etc.):

- The '573 Patent at Claim 2 recites:
    - "at least one frame device configured to operate according to preferences comprising an image display list defined by a user";
    - "a user interface coupled to at least one server system" that is "physically separable from" the frame device, the server system that "generate[s] package data" comprising "image data" and "preferences";
    - "periodically relaying said package data comprising said image data and said preferences to said at least one frame device when and in response to said at least one frame device automatically initiating communication with

[51] https://spectrum.ieee.org/vint-cerf.

[52] https://amturing.acm.org/award_winners/cerf_1083211.cfm.

[53] https://www.internethalloffame.org/vint-cerf/?gclid=CjwKCAjwwb6lBhBJEiwAbuVUSkX1SA7FeYCVDlWdSsUed1MZgDTLuwWumSwPqj-tIosY-BJHGNb2zRoClQgQAvD_BwE.

[54] https://www.nist.gov/director/vcat/biography-dr-vinton-g-cerf.

said server system and issuing a request for a current one of said package data comprising said image data and said preferences"; and

- as part of the automatic and periodic obtaining of images, the frame device would also "authenticate[s] said at least one server system before storing said image data and said preferences."

- The '930 Patent at Claim 1 recites:
    - "security information comprising authentication information for a first remote server system and a unique identifier for said digital display apparatus, and a current version of onboard software";
    - "an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region";
    - "a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files"; and
    - as part of the communications with the server system "an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system," and "a software update function configured to obtain an updated version of said

onboard software from said server and to replace said current version of said onboard software in said memory with said updated version."

- The '656 Patent recites:
    - "upon connection to a power source and a communications source and prior to receiving any input from a user, [] automatically initiat[ing] a communications session with said server system";
    - where the communication session includes:
        - "sending a request for image data to said server system";
        - "receiving image data and authentication information from said server system in response to said request," "authenticating said server system," "displaying said image data on said display screen," and "automatically updating said computer readable instructions for controlling the operation of said display device." '656 Patent at Claim 1. The claims further recite an "interface accessible by a web browser for managing behavior characteristics of said display device.
- The '562 Patent recites:
    - "a unique identifier for said apparatus, computer readable instructions different from said content for controlling the operation of said apparatus, and a version identifier for said computer readable instructions" (essential pieces for implementing the automated communications);

- “upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network”;
- “sending by said apparatus said unique identifier to said server system,” and “sending by said apparatus said version identifier to said server system” (essential pieces for implementing the automated communications);
- “receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system”;
- “updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions”; and
- “receiving by said apparatus updated content from said server system.

515. Clearly the above features relating to automatic setup, image retrieval, and updating are discussed in the articles mentioned above as being stand out features that impressed the industry.

516. In addition to industry praise, the Ceiva product and/or one of the Patents-in-Suit has been cited in other patents with a few of the many examples listed below:

- U.S. Patent Application 2008/0195962A1: Method and System for Remotely Controlling the Display of Photos in a Digital Picture Frame;
- U.S. Patent 8,635,282B2: Computer—automated system and method of assessing the orientation, awareness and responses of a person with reduced capacity;
- U.S. Patent 9,001,983B2: Digital photo frame with dial-a-tag functionality;
- U.S. Patent 9,785,229B1: Digital media resource messaging;
- U.S. Patent Application 2006/0066753A1: Camera docking station with multiple controls;

- U.S. Patent 8,117,313B2: System and method for adaptive formatting of image information for efficient delivery and presentation;
- U.S. Patent Application 2004/0122918A1: System and method of sharing images;
- U.S. Patent Application 2005/0060578A1: Method of and system for authentication downloading;
- U.S. Patent 8,032,487B1: System and method for synchronizing data in a networked system;
- U.S. Patent 8,095,871B2: System and method for GUI supported specifications for automating form field extraction with database mapping;
- U.S. Patent 7,263,382B2: System and method for background download of digital content to an intermittently connected peripheral device via a wireless device;
- U.S. Patent 9,360,997B2: Content presentation and interaction across multiple displays;
- U.S. Patent 9,300,610B2: System and method for selecting a file stored on a cloud server; and
- U.S. Patent 10,291,595B2 System and method for securely connecting network devices.

517. I noted that Dr. Johnson discusses secondary considerations beginning in paragraph 2009 of his report. In that section of his report, Dr. Johnson does not deny the industry praise that Ceiva's product received, but simply asserts that "Ceiva's interrogatory response again fails to provide any nexus between the purported industry praise and the asserted claims."

518. As I noted above, the claims include numerous elements that are directly related to the industry praise I listed above, A POSITA would read the industry praise and immediately see how it does indeed map to specific claim elements. Below are even more specific examples.

519. As one example, in Ed Curran's CNN interview found in CEIVA_3P_000002 he states "All you do is get this picture frame for $250. It plugs into a telephone line, and it plugs into the wall, and you're done." This maps to claim 1 of the '930 Patent which states that the claimed

digital display apparatus includes "a remote connection function configured to automatically initiate communications with said first remote server system across said network medium," and to claim 1 of the '656 Patent, which states that the computer readable instructions in the memory of the claimed display device include "instructions for causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system."

520. As another example, in his CNN interview found in CEIVA_3P_000002, Ed Curran goes on to state "Then this photo frame right here goes on the internet every night by making a local phone call in most cases, and it grabs the photos you put up." This maps directly to claim 2 of the '573 which states "said at least one server system coupled to said at least one frame device via said network, wherein said at least one server system is configured to periodically relay said package data comprising said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data." Claims 6 and 19 of the '573 Patent include similar limitations using slightly different language.

521. As yet another example, The Tech, volume 122, issue 58: CEIVA_3P_000008 states "The Ceiva Digital Photo Receiver is a brilliant solution to the perfect problem of this age. I like to call it an 'Internet enabled Photo frame.' The unit, with a subscription to the service, allows you to send digital pictures to the frame through the internet." This is a description of the server system that is configured to periodically relay said image data, described in Claims 2, 6 and 19 of the '573 Patent. It also maps to claim 1 of the '930 Patent "a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications and to receive

in response to said request for image data a set of data from said first remote server system comprising one or more image data files." This also maps to claim 1 of the '656 Patent which states, "causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system, said communications session comprising the steps of: sending a request for image data to said server system via said communications network."

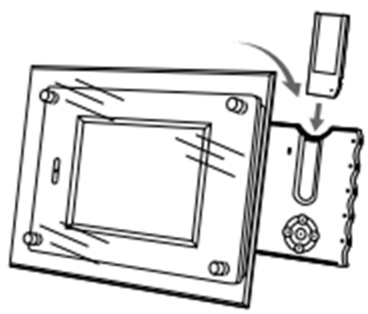
522. In addition to these clear mappings from the industry praise to specific elements is the nature of the industry praise. Wall Street Journal, CNN, and Vincent Cerf are all extremely influential, and they all found the Ceiva product fulfilled a long-felt need and was innovative. Furthermore, at least four other patents cite Ceiva's invention. But perhaps most compelling, Amazon referred to Ceiva's invention as a "revolutionary product." Ceiva-A 00008440. It is unclear how Amazon's expert can now deny that the invention was indeed revolutionary.

B. The Ceiva Frame is an Improvement Over an Exemplary Prior Art Device and Met Long-Felt and Unmet Needs

523. Dr. Johnson generally alleges that there were no long-felt needs with respect to the patented features, alleging that Bandaru and Muoio already addressed such needs. As I explain in my detailed analysis of Bandaru, Muoio, and the other asserted prior art, this is not the case. Further, in paragraphs 17-19 of his report. Dr. Johnson states: "the asserted patents generally relate to the area of computer networking and distributed system application programming." He then goes on to state that he considers December 10, 1999, as the priority date. I first note that Dr. Johnson's definition of the area of the Patents-in-Suit is extremely broad. I also note that according to his own CV, Dr. Johnson was not in the field at the time, and thus would not have been aware of any long-felt needs. As recognized by the MIT Tech article, one of the long-felt needs met by the Ceiva Frame was the problem that "As our world spins into a digital cataclysm,

those silver-haired wonders we call grandparents (and sometimes parents) are left behind the technological divide." As the MIT Tech article noted, "The Ceiva Digital Photo Receiver is a brilliant solution to the perfect problem of this age."

524. As I described above, the Patents-in-Suit provide an example of the prior art for comparison: the Sony PHD A55 -CyberFrame:[55]



525. There are several noteworthy differences between the Sony CyberFrame (referred to herein as the "PHD A55" or the "CyberFrame") and the Patents-in-Suit.

526. First, according to the Sony Manual for the PHD A55,[56] one must use a memory stick to store images:

Capturing still images onto a Memory Stick

❶ Open PictureGear 3.2 Lite, and choose the image you want to capture onto the Memory Stick from the INDEX screen (the selected image is surrounded by a green frame).
Select "Format Conversion" from the "File" menu.
The "Format Conversion" dialogue box is displayed.

❷ Select Memory Stick from "Output Format".
Click "Browse" and select the previously created folder, ②, from the "Folder", then click "OK".
Select Save as another file, and click "OK".

[55] https://www.sony.com/electronics/support/res/manuals/W000/W0009012M.pdf.

[56] https://www.sony.com/electronics/support/res/manuals/W000/W0007894M.pdf.

527. In addition, the article "Bit by Bit: Picture Frames Get Smart" indicates that the CyberFrame was only compatible with a Sony memory stick.[57]

528. Further, according to the Sony Manual, the Sony PHD A55 was limited to a single file type for still images (JPEG) and a single file type for moving images (MPEG):[58]

> This unit plays back compressed still images saved in JPEG format, and moving images (recorded with DSC-F55 / F55E or Digital Mavica) saved in MPEG format.
> With the supplied capturing and viewing software, "PictureGear 3.2 Lite" (for Windows®), you can capture images onto Memory Sticks with your computer.

529. This is in contrast to the Ceiva Frame which supported multiple formats, including JPEG, TIFF, and BMP.[59]

530. The article "STATE OF THE ART; A Frame To Hold Your Pixels" asserts that "the CyberFrame suffers from complexity, from its industrial plexiglass design and from its total reliance on the Memory Stick to get pictures and video clips into the device. If you cannot get pictures onto a Memory Stick, the frame is just an expensive paperweight."[60]

531. The complexity and limitations of the CyberFrame are in stark contrast to the Ceiva Frame's ease of use as discussed herein in Section VI.A ("General Features of the Patents-in-Suit").

532. The claimed inventions, as embodied in the Ceiva Frame, met long-felt and unmet needs.

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[57] Lawler, B. (2001). Bit by Bit: Picture Frames Get Smart. Retrieved from https://creativepro.com/bit-by-bit-picture-frames-get-smart/.

[58] https://www.sony.com/electronics/support/res/manuals/W000/W0007894M.pdf.

[59] Lawler, B. (2001). Bit by Bit: Picture Frames Get Smart. Retrieved from https://creativepro.com/bit-by-bit-picture-frames-get-smart/.

[60] CEIVA_3P_000011- 000015 at CEIVA_3P_000013.

533. The Ceiva Frame met the long-felt but unmet need of securely sharing digital photos remotely with friends or relatives who may not be tech-savvy, have a computer, or might not even have Internet access. Multiple articles and reviews of the Ceiva Frame identified that this innovative product met these needs. For example, the November 22, 2002 review of the Ceiva Frame, published in the MIT newspaper, The Tech, volume 122, issue 58, states that "The Ceiva Digital Photo Receiver is a brilliant solution to the perfect problem of this age." *See* CEIVA_3P_000008-000010 at CEIVA_3P_000010. It further states that "This device is an amazing blend of various technologies that push the burden of knowledge onto the giving party, who is responsible for uploading pictures to the frame via the Web, and for configuring the device." *See* CEIVA_3P_000008-000010 at CEIVA_3P_000010 (emphasis added).

534. For example, the March 2001 Fortune magazine article states:

> Ceiva's digital picture frame proves that Internet appliances can thrive. Most of these devices have a whole set of flaws: They are pretty expensive for what they do; they don't work that well; and **they're designed to let people who don't like computers do computer-like things, which is a problem because those kinds of people don't buy computer-like products, no matter what their size or shape**.

CEIVA_3P_000078-000079 at CEIVA_3P_000079.

535. The author went on to state:

> But something about the frame appealed to my wife, Charlotte, and she decided to buy two for our mothers for Christmas. And only then did we start to understand how cool these things really are. . . . **Neither mom is a hardcore PC user**; both, in fact, primarily use WebTV devices to send e-mail to the rest of our family. **But both managed to get the units installed, and Charlotte and I have sent them a bunch of pictures**—of our last vacation, a recent visit to my siblings, and other random events**. I was surprised at how easily they managed to get everything up and running.** I'm glad they managed it, and I'm glad we sent them the devices. **Because what we've got now is kind of tantalizing: a virtual photographic network for the family.** We post the photos to Ceiva's Website, which is more user-friendly than other photo sites I've tried to use. **The device pulls the photos off the site, and doing that is dead simple**. . . . But once you've mastered the process, **you've begun to replace the entire system of taking, printing, and mailing photographs. And that's very, very cool. In the past two months I've**

> **shared more pictures with my mother and mother-in-law than I have in, oh, all my life pre-Ceiva**.

Id. (emphasis added).

536. This long-felt but unmet need for an easy way to share photos long-distance with technologically-challenged friends or relatives is further identified in the December 1, 2004 Wall Street Journal Article, in which the author states:

> The coolest thing about the Ceiva is how the digital photos get into it. Unlike some other digital frames, the Ceiva isn't fed by plugging in memory cards or connecting cameras. It receives its photos via an automated Web connection. In fact, Ceiva owners don't need to know anything about the Internet or digital photography to use this device.
>
> For instance, you could give the Ceiva to grandparents with no PC or Internet service and feed it a constant stream of pictures by simply uploading them to Ceiva's servers using your own PC and Internet access, even if you are thousands of miles away from the Ceiva Receiver where you want them to appear.

CEIVA_3P_000086-000096 at CEIVA_3P_000094.

537. Seth Godin's e-book "99 Cows" further addresses how Ceiva met this long-felt but unmet need when he discusses how the Ceiva Frame changed the way his family shared photos with his father remotely, providing "the power of shared pictures" by "turning photographs from private scrapbooks into shared community property," and that "the buyers and the users [of the Ceiva Frame] are different people." *See* Ceiva-A 00011515-Ceiva-A 00011634 at Ceiva-A 00011607.

538. The August 2000 Money Magazine article states that "You can boot up your PC every time someone asks to see your wedding pictures, but a better option is the $250 Ceiva picture frame . . . . **The frame is a perfect gift for a technophobe: Once you set it up, all Mom or Dad has to do is press a button to see shots you've posted online**." *See* Ceiva-A 00016816-Ceiva-A 00016857 at Ceiva-A 00016824 (emphasis added).

539. Similarly, the August 2000 FamilyPC article states:

> One of a new breed of internet appliances, the Ceiva looks like a regular picture frame but it connects to the Internet so **you can upload the most up-to-date pictures from family and friends, (it's perfect gift for relatives who are always asking the latest photos of the kids.**) Here's how it works: You send your digital images to Ceiva's Website, and anyone with access to your account and a frame can download the images. The frame, which needs to be plugged into an AC outlet and telephone jack, automatically displays the newest images—up to 10 in slide show fashion.

See Ceiva-A 00016816-Ceiva-A 00016857 at Ceiva-A 00016826 (emphasis added).

540. The Horizon Air Magazine (July 2000) also identified the Ceiva Frame as resolving this unmet need:

> **You can send digital photos to nonwired relatives via a Ceiva Internet-Enabled Photo Frame. The recipient just plugs the frame into a phone jack**, and the images are automatically downloaded through an existing phone line and displayed one at a time in this simple black frame that can store up to 10 images at a time.

Ceiva-A 00016816-Ceiva-A 00016857 at Ceiva-A 00016839 (emphasis added).

541. CIO Magazine in July 2000 addressed the alternative created by the Ceiva Frame to the prior solution of "making countless reprints [of pictures] to send to friends and family" because the Ceiva Frame "displays pictures electronically for loved ones without a computer." The article described the Ceiva Frame as being "like a grandparent's dream come true." *See* Ceiva-A 00016816-Ceiva-A 00016857 at Ceiva-A 00016846 (emphasis added).

542. The Parade section of the April 30, 2000 Orange County Register further described how the Ceiva Frame met these needs, when it stated "Consider giving Mom a digital picture frame for Mother's Day this year. . . . Although you, the gift-giver, need Internet access to send photos to it, Mom doesn't. She simply plugs her Ceiva into a power outlet and a phone jack. Every night, the device automatically calls the Ceiva site and downloads any waiting images. . . . Only those whom Mom authorizes may send photographs to her account." *See* Ceiva-A 00016923-Ceiva-A 00016970 at Ceiva-A 00016940.

543. On April 21, 2000, MSNBC.com described the Ceiva Frame as a good product for a mother regardless of whether she "knows nothing about computers," and that a "Mom will need no training or additional electronic devices - just a flat surface to rest the frame on - but she'll be able to show off new pictures of the grandkids each day." The article further states that "If Mom is a technophobe, have no fear," because "Ceiva is easier to use than a typical telephone answering machine. Just plug your Ceiva into an ordinary telephone jack and electrical outlet, and the frame automatically dials in to the Internet and downloads each night the photographs you've made available." *See* Ceiva-A 00016923-Ceiva-A 00016970 at Ceiva-A 00016941.

544. PC Magazine on April 18, 2000, described the Ceiva Frame as an "ingenious" concept, and that "**Its ease of use makes the Ceiva ideal for sharing photos with relatives who don't have PCs**. Using a Ceiva is also a good way for anyone with a PC to enjoy the images that are collecting digital dust on a hard disk." The article further identifies how the Ceiva Frame met the above needs by stating that "**The Ceiva owner need not have a PC or an Internet account**. Simply plug the unit into a phone jack and push the button on the back; the unit automatically logs on to the Ceiva Website and downloads any new images posted to its account." *See* Ceiva-A 00016923-Ceiva-A 00016970 at Ceiva-A 00016945 (emphasis added).

545. In WWLTV.com, webmaster Jerry Seregni called the Ceiva Frame "one of the best 'Grandma gifts' I've seen." *See* Ceiva-A 00016890-Ceiva-A 00016922 at Ceiva-A 00016905 (emphasis added). Mr. Seregni further described how the Ceiva Frame met long-felt but previously unmet consumer needs:

> But forget the techno-babble. This is the **ultimate Grandma gift, especially for families spread all over the country—or the planet**. Grandma gets a Ceiva and suddenly she's getting new pictures of the grandkids all the time. **The pictures appear in the frame without her having to do a thing**. Imagine being able to send her snapshots of the family's skiing trip before you call her up to tell her all about it. One reason digital photography is growing so fast is because it's so easy to share

> pictures. Once you have your image on a personal computer, you can e-mail them to others or post them on a personal Web page. **Until now, the problem has been getting them to someone without a computer**, since making photographic-quality prints with a color inkjet is both time-consuming and expensive. **The Ceiva Frame is a clever alternative**.

Ceiva-A 00016890-Ceiva-A 00016922 at Ceiva-A 00016907 (emphasis added).

546. As another example, PC World on March 13, 2000, identifies the Ceiva Frame as a solution to these unmet needs when it states. "Sharing your family's picture-perfect moments via the Internet is a great idea—if you already have a computer, an Internet account, and a scanner or digital camera. **But what about the lest tech-savvy members of your family? You could keep sending snapshots to Grandma via snail mail—or you could buy her Ceiva Logic's $249 digital picture frame**." The article goes on to identify that the Ceiva Frame "automatically downloads your photos from Ceiva's Web-based photo sharing service, **without the assistance of a computer**. Grandma, and anyone else with a Ceiva picture frame and your authorization, can then see up to ten of your pictures cycling continuously all day long. **And when Grandma rises the next morning, she will find that those photos have been miraculously replaced by ten new ones**." It also describes that "[s]etting up the **Ceiva frame requires practically no effort**; just connect the AC adapter and plug the phone line into any RJ-11 phone jack in the house. . . . **That's all there is to it for the user—everything else is remotely controlled by the registered picture provider**." *See* Ceiva-A 00016890-Ceiva-A 00016922 at Ceiva-A 00016911-12 (emphasis added).

547. The OCRegister.com/connect guide on March 14, 2000, also identified some of the unmet needs solved by the Ceiva Frame:

> A personal Web page may be all the rage for sharing family photos, but **booting up and logging on is a lot of work just to view an "awwwww"-worthy snapshot of Junior. Besides, PCs aren't designed for nightstands**. But Ceiva Logic's digital photo frame does — a black 8 inch by 10-inch wooden frame surrounding a 4-inch by 6-inch LCD screen. **The Ceiva plugs into standard electric and phone**

> **outlets. While you sleep, the frame dials in and downloads photos** that you've uploaded from your PC into your password-protected library on Ceiva's Website. **In the morning, up to 10 new shots are displayed as a slide show** that can freeze on one image at the touch of a button.

Ceiva-A 00016890-Ceiva-A 00016922 at Ceiva-A 00016915 (emphasis added).

548. Even Amazon acknowledged the solution to unmet needs provided by the Ceiva Frame in the "draft" April 4, 2000 email to Amazon's first customers, in which it states, "Just store your images in your account at www.ceiva.com--**encourage your friends and family to do the same**. **Then plug your Ceiva frame into the phone line and it'll fill with smiles and snapshots of your favorite people. No Internet connection or computer needed**." *See* Ceiva-A 00009494-00009496 (emphasis added).

549. Further, in Amazon's Mother's Day ad campaign, Amazon identifies the Ceiva Frame as "The first picture frame that receives photos from friends and family over the internet without a computer." *See* Ceiva-A 00056116; Ceiva-A 00106164 (emphasis added).

C. Copying by Others

550. As a first in class product the Ceiva Frame, a commercial embodiment of the Patents-in-Suit, was copied by others.

551. Two such examples that followed shortly after the release of the Ceiva Frame are the Digi-Frame DF-1700[61] and DF-1710[62] digital picture frames:[63]

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[61] https://web.archive.org/web/20021215110052/http://www.digi-frame.com/df1700.html

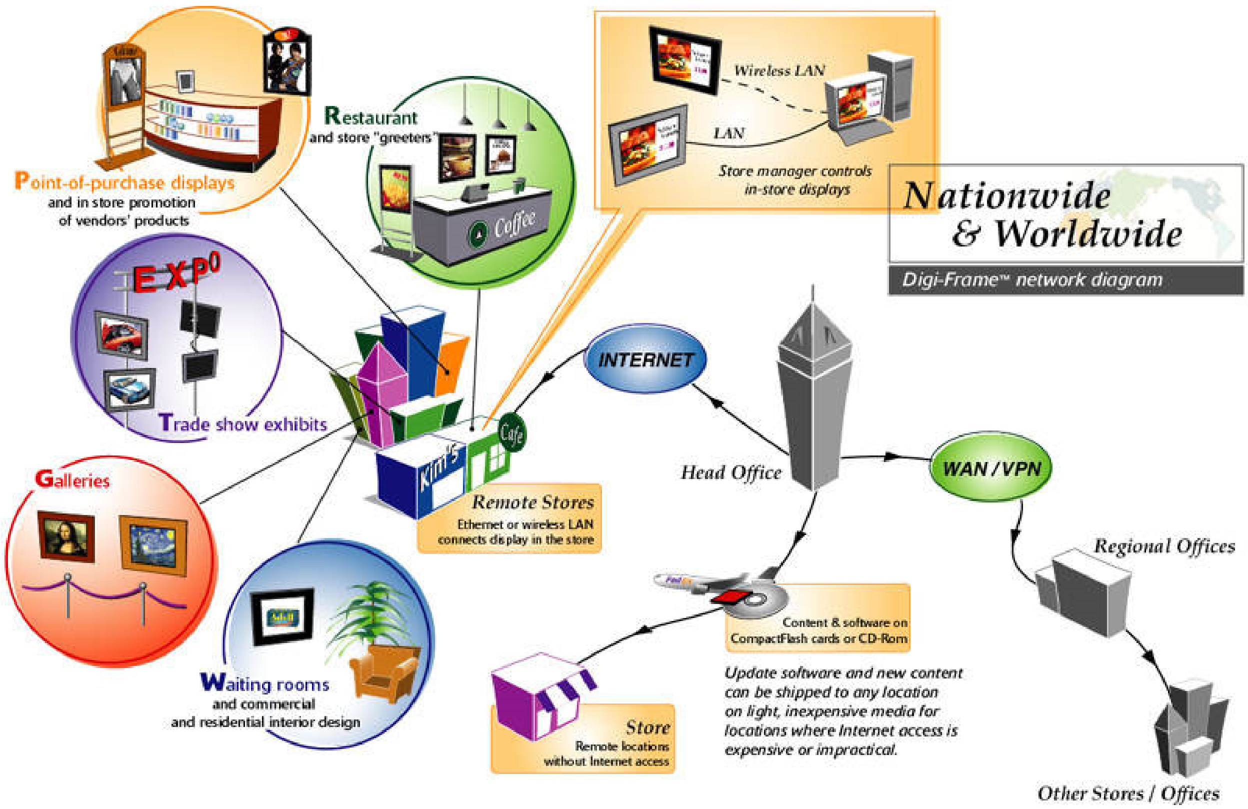
[62] https://web.archive.org/web/20030404005605/http://www.digi-frame.com:80/df1710.html

[63] https://web.archive.org/web/20021215110052/http://www.digi-frame.com/df1700.html; https://web.archive.org/web/20021215110052/http://www.digi-frame.com/df1700.html

Features:

- Bright, crisp, high-definition XGA-resolution display
- Built-in Pentium®-class CPU and 6GB hard drive
- All required presentation software included and pre-installed
- Can operate stand-alone or with a network (content must be loaded via network prior to stand-alone operation)
- Full control of presentations remotely via network using any browser
- Each DF-1700 on a network is independent and can display different content
- Wireless LAN option
- Still image (JPEG) and video (MPEG-1) content can be combined in presentations
- Uses existing ethernet infrastructure, no additional wiring required
- Accomodates both "push" and "pull" transfers for multi-tiered content access
- Easy programming via simple text script files
- Password protection for network access control
- Play MP3 background soundtrack during still image slideshows
- Electronic content delivery saves display update cost versus non-electronic displays
- Software can be updated over the network
- Digital still content creation is fast and easy
- Ease of use: no local control means the remote displays only need to be turned on
- Mounting holes accept any VESA standard mounting hardware to accommodate any installation

552. The DF-1700 could be remotely operated and controlled via network connections such as local area networks (LANs) or via the Internet:[64]



64 https://web.archive.org/web/20030418151601/http://www.digi-frame.com/df1700_network.html

553. Similarly, the DF-1710 model was advertised in April 2003 in the following way:[65]

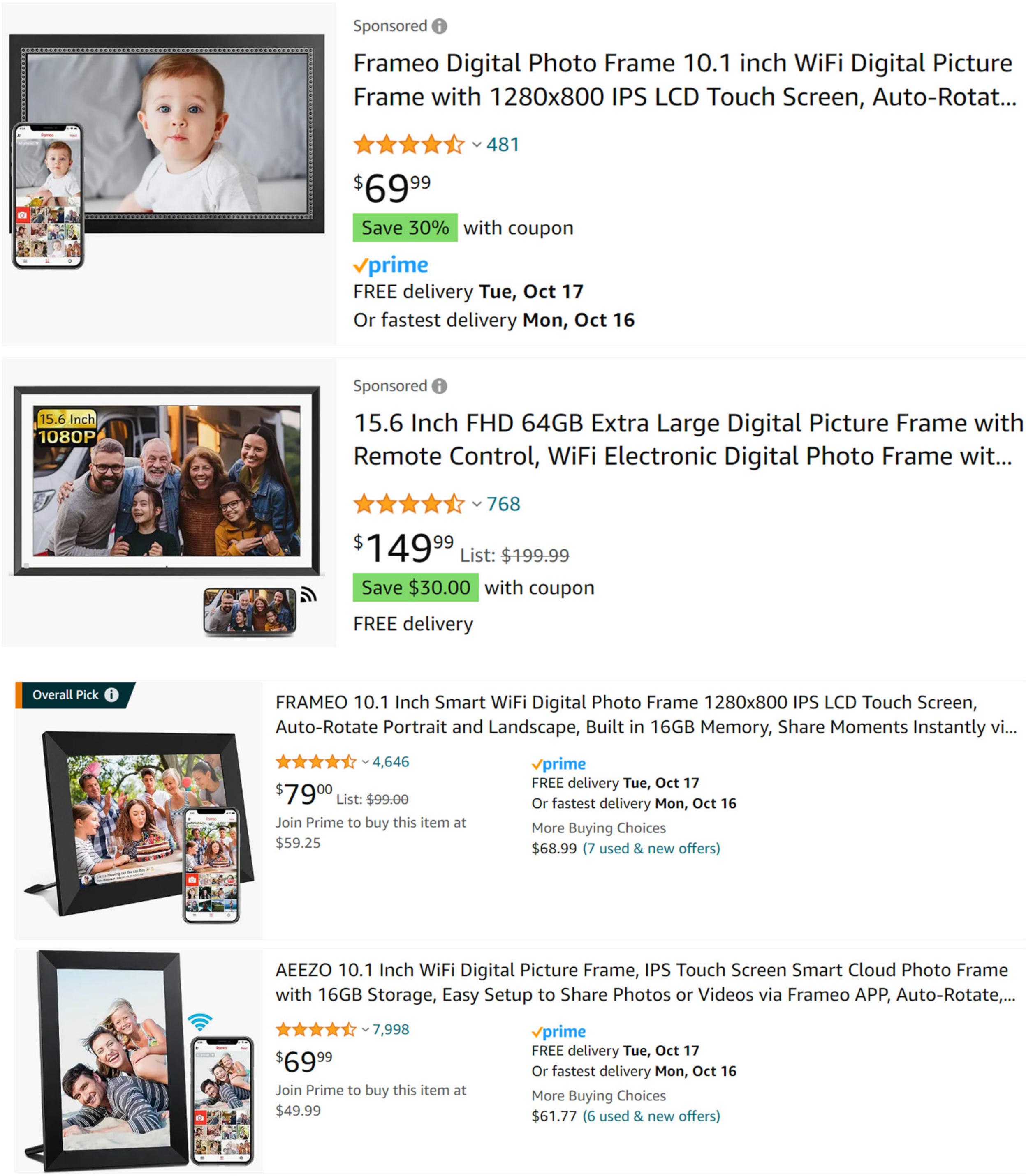
65 https://web.archive.org/web/20030404005605/http://www.digi-frame.com:80/df1710.html

554. Over the years, many others have copied the Ceiva Frame, as is evidenced by the many networked picture frame available for sale on Amazon.com and elsewhere:[66]

[66] https://www.pcmag.com/picks/the-best-digital-picture-frames; https://www.techradar.com/best/best-digital-photo-frame; https://www.amazon.com/s?k=wifi+picture+frame&crid=290XB8J20X9M4&sprefix=wifi+picture+frame+%2Caps%2C93&ref=nb_sb_noss_2.

(Image credit: Future)

2. Nixplay 2K Smart Digital Photo Frame



D. Lack of Contemporaneous and Independent Invention by Others

555. As shown throughout my report, despite the numerous prior art challenges put forth by Dr. Johnson, many of which are dated contemporaneously with the Patents-in-Suit (in the late 1990s), none of that prior art discloses or suggests all the patented features of the Patents-in-Suit.

E. Commercial Success

556. I understand that the Ceiva Frame products were commercial embodiments of '573, '930, and '562 Patents, as reflected in the Declaration of Professor Stephen A. Edwards dated October 7, 2021, and the Expert Report of Prof. Stephen A. Edwards, Ph.D Regarding Infringement of U.S. Patent Numbers 9,203,930; 9,124,656; 9,654,562; and 6,442,573 dated August 24, 2023 (p. 340).

557. I understand that from 2001 to 2019, Ceiva sold [redacted] of the Ceiva Frame products resulting in hardware revenue of [redacted], service revenue of [redacted], and bundled revenue of [redacted], as reflected in Ceiva-A 00037473-74.

558. The connection between the inventions disclosed and claimed in the Asserted Patents and the sales of the Ceiva Frame products is evident from, among other things, the industry praise received by the Ceiva Frame products and those products being coextensive with and essentially the same as exemplary embodiments of the inventions disclosed and claimed in the Asserted Patents.

559. The commercial success of the Ceiva Frame products tends to show and further supports my opinion that the Asserted Claims are non-obvious.

XI. THE ASSERTED CLAIMS SATISFY THE WRITTEN DESCRIPTION, ENABLEMENT, AND DEFINITENESS REQUIREMENTS

560. Dr. Johnson's report argues the claims fail the written description, enablement, and/or indefiniteness requirement. Based on my review of Dr. Johnson's report and my understanding from Ceiva's counsel, Dr. Johnson's report asserts lack of enablement for each of those claim elements recited in his report in Section XIII, and additionally asserts lack of written description for one claim element and indefiniteness for a second claim element - both elements are recited in the '573 Patent. In the event my understanding is incorrect and/or Amazon asserts

additional 112 invalidity positions not set forth in Dr. Johnson's report, I reserve the right to supplement my report or otherwise respond to any such assertion(s).[67]

561. The claims and patents fully teach a POSITA how to make and use the full scope of the claimed inventions without undue experimentation. All claims and claim terms are adequately described and supported by the specification and enabled. The specification provides a detailed description with robust examples and figures a POSITA would easily understand. All claims and terms meet the definiteness requirement, such that, when read in light of the specification and prosecution history, they inform those skilled in the art about the scope of the invention with reasonable certainty.

562. Dr. Johnson's opinions are conclusory and fail to provide any evidence that a POSITA would be unable to make and use the full scope of the claimed inventions without undue experimentation—let alone satisfying the burden of showing even some experimentation is required. In fact, Dr. Johnson's report fails to identify any specific examples that fall within the claims but are not enabled.

563. With respect to enablement, Dr. Johnson's report also merely concludes with respect to each claim element that "[t]he claim limitation therefore attempts to monopolize an entire class of things defined by their function" and "A POSITA would not have understood, without undue experimentation, how to practice the limitation '[XXXX]' . . ." - without defining what is the "entire class of things" the claimed invention is attempting to monopolize.[68] Dr. Johnson does not identify what alleged experimentation would be required with respect to any

[67] It is my opinion that each of the Patents-in-Suit satisfies the requirements of 35 U.S.C. § 112.

[68] It is my understanding that the "claimed invention" (i.e., all claim elements as arranged as they are in the claim and their inter-relationships) should be viewed and assessed in its entirety when assessing whether the claimed invention covers an entire class of things.

given claim element, or why any given arrangement of options described in the specification would result in a non-functioning combination. Moreover, even if each claim limitation may be randomly parsed to the point it is abstractly broad (e.g., "distributing image data"), that does not render the claimed invention (as defined by all of the claim limitations) similarly broad.

564. In addition, other than arguing in a conclusory fashion that the scope of the claims is "broad" (*i.e.*, breadth of the claims) and requires "an immense amount of experimentation" (i.e., quantity of experimentation required), his report also fails to identify, address or discuss evidence or facts pertinent to the other seven *Wands* factors.[69] The claimed invention does not fall within the unpredictable fields of pharmaceutical or biotechnology and, instead, falls within the predictable field of the electronic/mechanical arts involving communications devices with a display and communication of data over a network. The report's analysis of enablement also does not discuss the presence/absence of working examples, the nature of the invention, the state of the prior art, or the relative skill of a POSITA.

A. The '573 Patent

1. "distributing image data"

565. Dr. Johnson argues that the Asserted Claims each claim a "system for distributing image data" within the preamble, and that these claimed systems can use any one of multiple method to distribute the image data. Dr. Johnson argues that data can be distributed on one of multiple types of networks, such as the Internet, and that the claimed image data can be one of multiple types of image data such as those listed in the specification. Dr. Johnson then concludes

[69] I also note that Dr. Johnson's opinions directly contradict one another: Dr. Johnson's report argues that many claim elements would require a POSITA to engage in undue experimentation to make and use them—while also asserting such claim elements were well-known, well understood, and were in use before the date of the claimed inventions. *See*, Johnosn ¶¶310-433.

that this claim limitation "therefore attempts to monopolize an entire class of things defined by their function," and that a POSITA "would not have understood, without undue experimentation, how to practice the limitation of these claims in view of the '573 patent. Johnson ¶2030.

566. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled. In fact, Dr. Johnson argues that "the ability to download images—or any other kind of information—from one computer to another over a network was well established, well known and entirely routine by the time the asserted patents were filed. As described in Section VIII, the Internet allows computers all over the world to connect to each other and to transfer arbitrary information from one computer to another." Johnson ¶348. He further states that Internet protocols "can be used to download any type of information, whether images or otherwise." Johnson ¶348. Therefore, according to Dr. Johnson's understanding of the state of the art, no undue experimentation would be required to enable a POSITA to practice distributing image data within a system.

567. The specification of the '573 Patent describes that prior systems and devices "lack the ability to automatically distribute data" '573 patent at 4:7-9. To address these issues, the '573

Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '573 patent at 8:35-38, that "data about each user and the preferences associated with that user may be held in the data repository," '573 patent at 19:11-14, that the "data repository stores information used to control the content distributed to and from each frame," '573 patent at 19:9-12, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '573 patent at 19:17-20.

568. The specification further explains that "[o]nce image data resides in the data repository, step **611** executes," "[a]t step **611**, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory" '573 patent at 28:13-18. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '573 patent at 29:42-49.

569. A POSITA would be enabled to implement this claim limitation.

2. "operate according to preferences defined by a user" and "operate according to preferences comprising an image display list defined by a user

570. Dr. Johnson alleges that the term "operate according to preferences defined by a user" lacks enablement and "attempts to monopolize an entire class of things defined by their function." Further, Dr. Johnson alleges that a POSITA would require undue experimentation to practice this limitation because the "specification does not define or limit the preferences that can be defined by a user, nor does it define or limit the user that can define the preferences. The specification likewise does not limit the operations that the frame device can perform in response

to the user-defined preferences." Johnson ¶2031-32. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

571. The specification of the '573 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '573 patent at 3:40-43, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '573 patent at 4:4-6, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '573 patent at 4:7-9. To address these issues, the '573 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data according to a set of preferences," '573 patent at 8:35-38, that "data about each user and the preferences associated with that user may be held in the data repository," '573 patent at 19:11-14, "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device," '573 patent at 19:17-20, "the behavior characteristics may be established by default or customized according to the user's

preferences," '573 patent at 25:8-11, "the frame device obtains the behavioral characteristics set via the picture box, by accessing the data repository" and the frame device "loads the behavioral characteristics into flash memory." '573 patent at 25:17-22.

572. Preferences are even further described in the '573 Patent. In "one or more embodiments of the invention, the data format of the submitted image is modified to conform to the preferences of the frame device," for example, if "the frame device . . . is capable of rendering JPEG images for display, the image will be converted from BMP format to JPEG format." '573 patent at 26:66-27:6. "Dimensional aspects" such as "resolution" can also be altered. '573 patent at 27:6-10. "Package data" provided to frame devices from the server can include "additional parameters needed to direct the behavior characteristics of the frame device," such as "timing information" that can define "the time the frame device is scheduled to dim display 313" and/or "the time the frame device is scheduled to connect to the data repository for an update." '573 patent at 29:43-49, 11:35-40. A frame device that receives package data "loads the contents of the package into memory." '573 patent at 29:55-57.

573. A POSITA would be enabled to implement this claim limitation.

3. "obtain image data and said preferences from said user"

574. Dr. Johnson alleges that the term "obtain image data and said preferences from said user" lacks enablement for the reasons cited with respect to the prior two claim elements. Further, in reference to the preceding element, Dr. Johnson alleges that a POSITA would require undue experimentation to practice this limitation. Johnson ¶2033. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class

covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

575. The specification of the '573 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '573 patent at 3:40-43, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '573 patent at 4:4-6, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '573 patent at 4:7-9. To address these issues, the '573 Patent describes, for example, that "data about each user and the preferences associated with that user may be held in the data repository." '573 patent at 19:11-14. To obtain image data and preferences, the specification of the '573 Patent describes a user interface (a picture box viewer) that "is a web browser configured to display picture box 523 (e.g., a web page). … However, picture box viewer 500 may be any type of software program configured to display picture box 523," '573 patent at 22:30-35, that "[p]icture box 523 is any example of the type of interface that may be used to create and/or modify records in the data repository," and "[t]he information stored in the data repository may be presented to the user via picture box 523." '573 patent at 22:45-48. For instance, a "frame device becomes associated with a picture box" and "image data may be sent to the frame device by sending the data from a data source . . . to the picture mail address associated with that device" and this user interface "provides the user with an interface for managing the behavior characteristics of one or more registered frame devices." '573

patent at 21:64-22:9. It is clear from the specification that image data and preferences can be obtained from users.

576. Preferences are even further described in the '573 Patent. In "one or more embodiments of the invention, the data format of the submitted image is modified to conform to the preferences of the frame device," for example, if "the frame device . . . is capable of rendering JPEG images for display, the image will be converted from BMP format to JPEG format." '573 patent at 26:66-27:6. "Dimensional aspects" such as "resolution" can also be altered. '573 patent at 27:6-10. "Package data" provided to frame devices from the server can include "additional parameters needed to direct the behavior characteristics of the frame device," such as "timing information" that can define "the time the frame device is scheduled to dim display 313" and/or "the time the frame device is scheduled to connect to the data repository for an update." '573 patent at 29:43-49, 11:35-40. A frame device that receives package data "loads the contents of the package into memory." '573 patent at 29:55-57.

577. Flow charts are commonly used in engineering to describe the control flow of algorithms.

578. Figure 10 of the '573 patent is a flow chart illustrating the process to obtain new images and data:

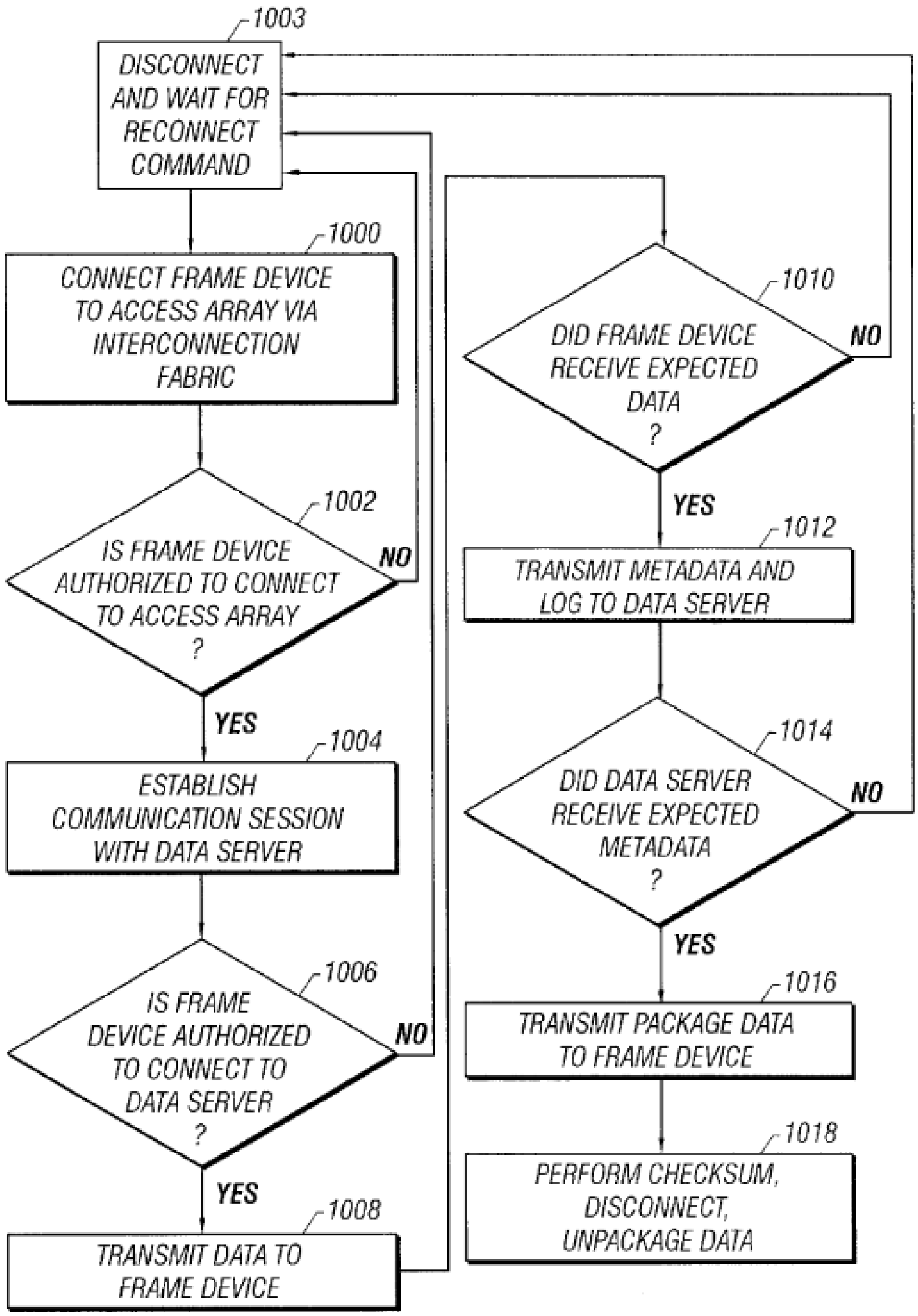


FIGURE 10

579. The ’573 patent also describes the specific hardware components within the frame device that store image data “Flash memory 309 provides the frame device with storage Space for the image data. For example, image data held in the data repository may be copied into flash memory 309 when a connection to the data repository occurs.” ’573 patent at 16-21.

580. Figure 1, which was previously discussed, shows image data (214) in the data repository (213). Figure 6 shows a flowchart wherein the steps of retrieving image data are detailed:

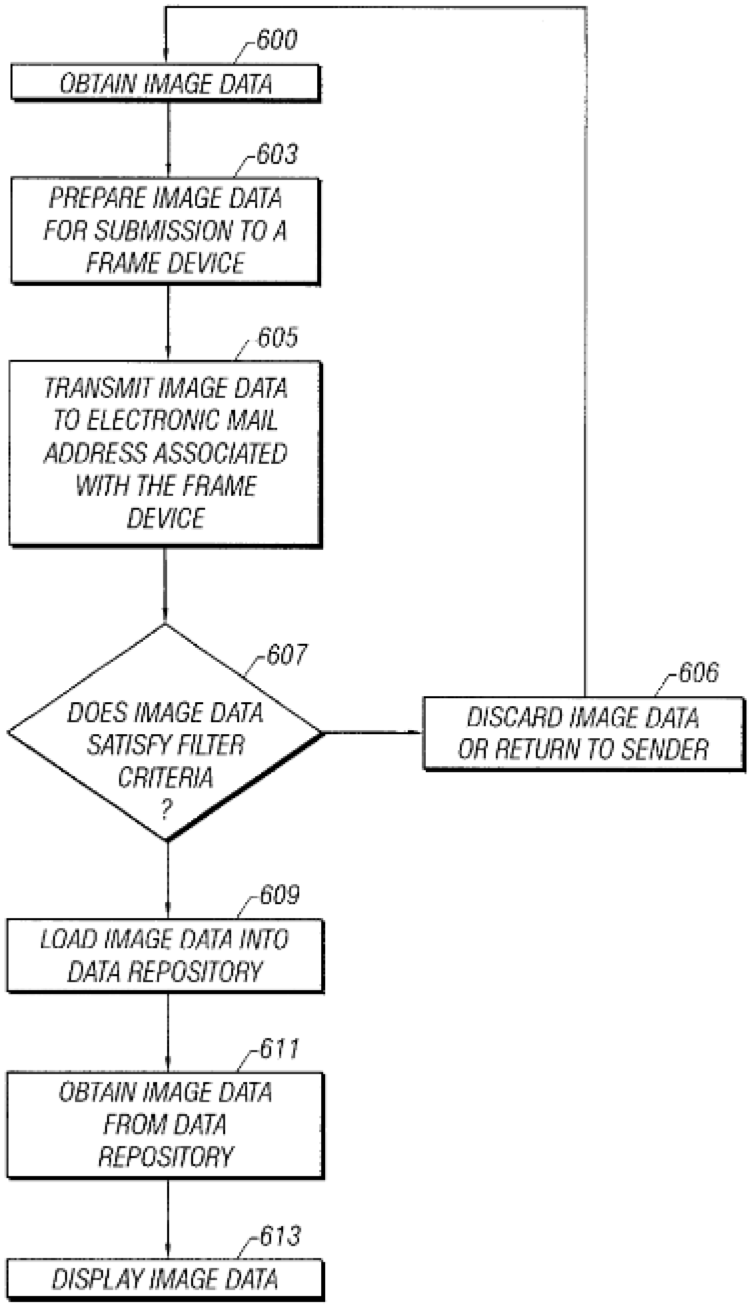


FIGURE 6

581. A POSITA would be enabled to implement this claim limitation.

4. "generate package data comprising said image data and said preferences"

582. Dr. Johnson alleges that the term "generate package data comprising said image data and said preferences" lacks enablement as it "attempts to monopolize an entire class of things defined by their function" and that a POSITA would not have understood how to practice the limitation without undue experimentation. Johnson ¶2034. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

583. This element is sufficiently enabled. The specification of the '573 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '573 patent at 4:7-9. To address these issues, the '573 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '573 patent at 8:35-38, that "data about each user and the preferences associated with that user may be held in the data repository," '573 patent at 19:11-14, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '573 patent at 19:17-20. The specification also identifies examples of package data comprising image data and

preferences, such as, "The package Server 271 may also generate packages that contain content and formatting data (e.g., image and/or text data)." '573 patent at 17:63-65. The specification of the '573 Patent further explains that the "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '573 patent at 29:42-49.

584. A POSITA would be enabled to implement this claim limitation.

5. "provide said image data and said preferences to said at least one server system"

585. Dr. Johnson alleges that the term "provide said image data and said preferences to said at least one server system" lacks enablement as it "attempts to monopolize an entire class of things defined by their function" and that a POSITA would not have understood how to practice the limitation without undue experimentation. Johnson ¶2035. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

586. This limitation is sufficiently enabled. The specification of the '573 Patent describes that prior systems and devices did not "display the image data according to a set of

predetermined preferences," '573 patent at 3:40-43, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '573 patent at 4:4-6, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '573 patent at 4:7-9. To address these issues, the '573 Patent describes, for example, that "data about each user and the preferences associated with that user may be held in the data repository." '573 patent at 19:11-14. To obtain image data and preferences, the specification of the '573 Patent describes a user interface (a picture box viewer) that "is a web browser configured to display picture box 523 (e.g. a web page) … However, picture box viewer 500 may be any type of software program configured to display picture box 523," '573 patent at 22:30-35, that "[p]icture box 523 is any example of the type of interface that may be used to create and/or modify records in the data repository," and "[t]he information stored in the data repository may be presented to the user via picture box 523." '573 patent at 22:45-48.

587. For instance, a "frame device becomes associated with a picture box" and "image data may be sent to the frame device by sending the data from a data source . . . to the picture mail address associated with that device" and this user interface "provides the user with an interface for managing the behavior characteristics of one or more registered frame devices." '573 patent at 21:64-22:9; *see also* FIG. 5 of the '573 Patent. Images and preferences provided via the interface are stored in a data repository that "may act as an image relay mechanism which holds the image data until the frame device connects to the repository for an update." The specification of the '573 Patent further describes that "a picture box engine residing on a server system may generate the picture box," '573 patent at 7:40-42, and that "system components" include "a data repository server 269." '573 patent at 15:58-59, 17:30-35.

588. Preferences are even further described in the '573 Patent. In "one or more embodiments of the invention, the data format of the submitted image is modified to conform to the preferences of the frame device," for example, if "the frame device . . . is capable of rendering JPEG images for display, the image will be converted from BMP format to JPEG format." '573 patent at 26:66-27:6. "Dimensional aspects" such as "resolution" can also be altered. '573 patent at 27:6-10. "Package data" provided to frame devices from the server can include "additional parameters needed to direct the behavior characteristics of the frame device," such as "timing information" that can define "the time the frame device is scheduled to dim display 313" and/or "the time the frame device is scheduled to connect to the data repository for an update." '573 patent at 29:43-49, 11:35-40. A frame device that receives package data "loads the contents of the package into memory." '573 patent at 29:55-57. The interaction between the frame devices and the servers is shown in figure 2b. Figure 10 is a flow chart that shows transmitting package data to the frame device.

589. A POSITA would be enabled to implement this claim limitation.

6. "issuing a request for a current one of said package data comprising said image data and said preferences"

590. Dr. Johnson alleges that the term "issuing a request for a current one of said package data comprising said image data and said preferences" lacks enablement as it "attempts to monopolize an entire class of things defined by their function" and that a POSITA would not have understood how to practice the limitation without undue experimentation. Johnson ¶2036. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems,

or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

591. This element is sufficiently enabled. The specification of the '573 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '573 Patent at 4:7-9. To address these issues, the '573 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '573 Patent at 8:35-38, that "data about each user and the preferences associated with that user may be held in the data repository," '573 Patent at 19:11-14, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '573 Patent at 19:17-20.

592. The specification of the '573 Patent further explains that "[o]nce image data resides in the data repository, step **611** executes," "[a]t step **611**, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory" (28:13-18). The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device" (29:42-49). The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a

party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user (28:18-24).

593. A POSITA would be enabled to implement this claim limitation.

7. "periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data"

594. Dr. Johnson alleges that the term "periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data" (along with similar claim terms in claims of the '573 patent) lacks enablement as it "attempts to monopolize an entire class of things defined by their function" and that a POSITA would not have understood how to practice the limitation without undue experimentation. Johnson ¶2037-38. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

595. This element is sufficiently enabled. The specification of the '573 patent describes that prior systems and devices "lack the ability to automatically distribute data." '573 Patent at 4:7-9. To address these issues, the '573 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '573 Patent at 8:35-38, that "data

about each user and the preferences associated with that user may be held in the data repository," '573 Patent at 19:11-14, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '573 Patent at 19:17-20.

596. The specification of the '573 Patent further explains that "[o]nce image data resides in the data repository, step **611** executes," "[a]t step **611**, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory." '573 Patent at 28:13-18. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '573 Patent at 29:42-49. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '573 Patent at 28:18-24. See also '573 patent at 7:7-11.

597. A POSITA would be enabled to implement this claim limitation.

8. "authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in memory of said frame device"

598. Dr. Johnson alleges that the term "authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in memory of said frame device" lacks enablement as it "attempts to monopolize an entire class of things defined by their function" and that a POSITA would need

to "determine how to perform the claimed authentication and storage without guidance from the specification." Johnson ¶2039. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. In this instance, Dr. Johnson does not allege that any experimentation would be required. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

599. I note that "authenticate" is a term of art. Boston University[70] describes authentication as follows:

> "Authentication is used by a server when the server needs to know exactly who is accessing their information or site. Authentication is used by a client when the client needs to know that the server is system it claims to be. In authentication, the user or computer has to prove its identity to the server or client. Usually, authentication by a server entails the use of a user name and password. Other ways to authenticate can be through cards, retina scans, voice recognition, and fingerprints. Authentication by a client usually involves the server giving a certificate to the client in which a trusted third party such as Verisign or Thawte states that the server belongs to the entity (such as a bank) that the client expects it to. Authentication does not determine what tasks the individual can do or what files the individual can see. Authentication merely identifies and verifies who the person or system."

[70] https://www.bu.edu/tech/about/security-resources/bestpractice/auth/

600. The National Institute of Standards[71] has a more circumscribed definition: "The process of establishing confidence of authenticity; in this case, the validity of a person's identity and an authenticator."

601. A POSITA would certainly know precisely what is meant by authenticate or authentication whether that is authenticating at least one server system or authenticating a user. The fact that authenticate and authentication are terms of art would make the meaning of these claim terms quite clear to a POSITA.

602. This limitation is sufficiently enabled. The '573 Patent describes, for example, that "a package may contain authentication information that provides frame device 200 with a way to verify whether package server 271 is authentic." '573 Patent at 17:50-53. The specification also states "[w]hen the communication session is initiated … the data server transmits data to the frame device. … [T]he frame device examines the data it received to determine if the data is the type of data expected. For example, the frame device may authenticate the data by checking the size, contents, or encryption sequence associated with the data to determine if the transmitted data came from an authorized data server." '573 Patent at 29:1-6.

603. The specification also states that:

> During the communicate session frame device 200 initiates a GET command via path and thereby obtains an authentication file from package server 271. When frame device 200 obtains the authentication file, it determines if the authentication file is authentic by computing a checksum and comparing the result to an expected results file. If the comparison matches, frame device 200 "trusts" package server 271. When a trust relationship is established frame device 200 transmits package data to package server 271. In one more embodiments of the invention, frame device 200 tells package server 271 how much package data it will be sending (e.g. via a SIZE command) and then transmit that amount of data to package server 271 via a PUT command. For example, a content list

[71] https://csrc.nist.gov/glossary/term/authenticate

> and a log file may be transmitted to the server via the PUT command. Package server 271 then computes and compares the checksum information associated with the transmitted package data (e.g. metadata). Frame device 200 may also utilize the GET command to obtain additional packages. In one or more embodiments of the invention, the USER command and PASS command are modified to provide an additional layer of security. For example, the PASS command and the USER command may be modified to transmit and/or bounce back encrypted strings of data that are authenticated before access to the package data is permitted.

’573 Patent at 18:17-41.

604. In addition, the patent specification provides sufficient enablement and description of “preferences” as used in this term, as described with respect to the elements in sections XI.A.2-4, which are incorporated herein by reference.

605. A POSITA would be enabled to implement this claim limitation.

9. “stores said preferences and operating system software for said frame device at said at least one frame device in memory of said frame device”

606. Dr. Johnson alleges that the term “stores said preferences and operating system software for said frame device at said at least one frame device in memory of said frame device” lacks enablement “for the reasons I provided in the subsections above of Section XIII.A” and that a POSITA would not have understood how to practice the limitation without undue experimentation because the specification “does not specify an operating system used by the frame device.” Johnson ¶2040. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an “entire class of things defined by their function” solely with respect to this element, and to the extent this argument is incorporated by reference, Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim

in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

607. This element is sufficiently enabled. The specification of the '573 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '573 Patent at 3:40-43, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '573 Patent at 4:4-6, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '573 Patent at 4:7-9. To address these issues, the '573 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '573 Patent at 8:35-38, that "data about each user and the preferences associated with that user may be held in the data repository," '573 Patent at 19:11-14, "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '573 Patent at 19:17-20.

608. The specification of the '573 Patent further describes that "[f]lash memory 309 provides the frame device with storage space for the image data," that "image data held in the data repository may be copied into flash memory 309 when a connection to the data repository occurs," that "[f]lash memory 309 may hold the onboard software that defines the functionality of the device," and that "[t]he mechanism and data used to control the behavior characteristics of the frame device is also stored in flash memory 309." '573 Patent at 11:18-28.

609. As has been discussed previously in this report, preferences are clearly defined in the ’573 patent and enabled. All the aspects of the construction and usage of the frame device are explained in the ’573 patent. Figure 3 of the ’573 patent is a block diagram showing internal components of the frame device:

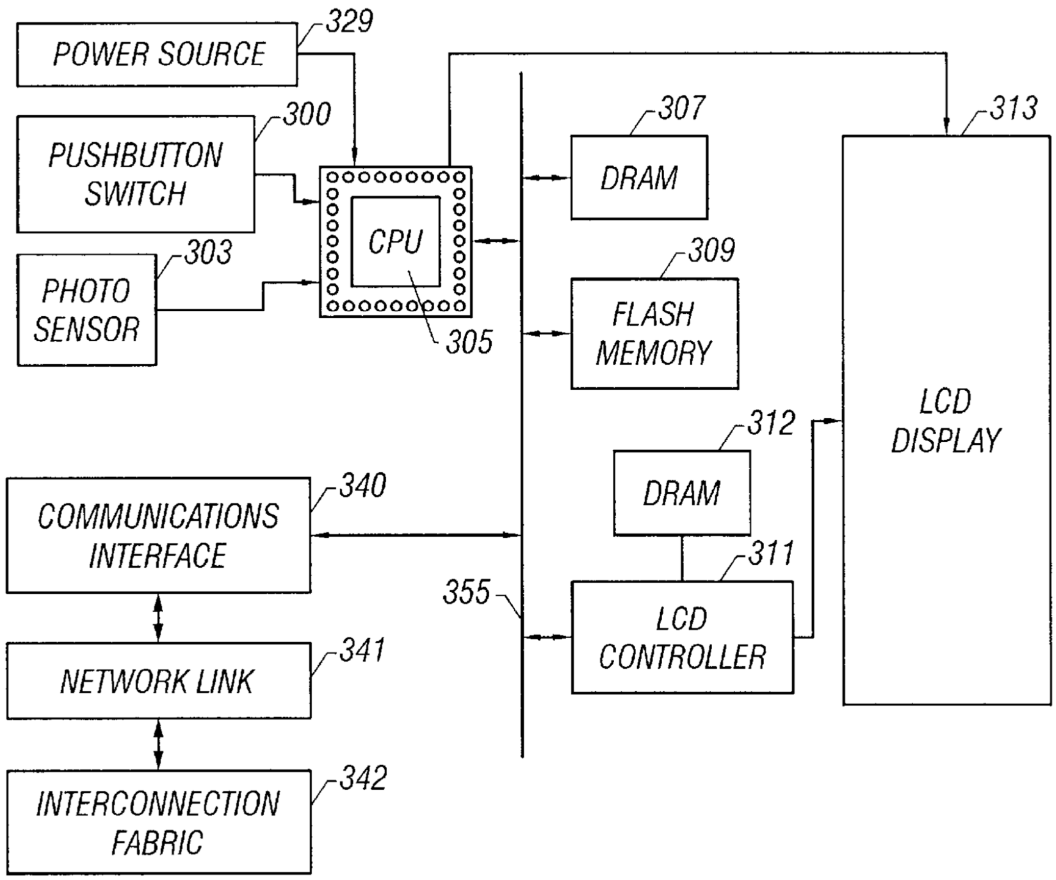


FIGURE 3

610. A POSITA would be enabled to implement this claim limitation.

10. “obtains an update for said operating system software from said at least one server system”

611. Dr. Johnson alleges that the term “obtains an update for said operating system software from said at least one server system” lacks enablement “for the reasons I provided in the subsections above of Section XIII.A” and that a POSITA would not have understood how to practice the limitation without undue experimentation because the specification “does not specify

how the operating system is updated or how the updated operating system is obtained by the frame device." Johnson ¶2041. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and to the extent this argument is incorporated by reference, Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

612. This element is sufficiently enabled. It must be first noted that the server system is described in detail in the '573 patent. Throughout the '573 patent, the server(s) are clearly described in sufficient detail for a POSITA to implement this claim limitation. The term "operating system" is a term of art that a POSITA would be familiar with. Dr. Johnson uses the term frequently in his report without defining it, apparently acknowledging that no definitions is needed. The term update has a plain and ordinary meaning.

613. The specification of the '573 Patent describes that prior systems and devices "cannot be remotely updated, modified, or otherwise changed," and that "[f]or example, a new feature, such as the ability to obtain new images from a network, cannot be added by transmitting a software update to the device from a remote source." '573 Patent at 1:23-30. To address these issues, the '573 Patent describes, for example, that "[t]he software that provides the frame device with its operational logic may be automatically updated and/or upgraded without input from the

user" and "[f]or example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device." '573 Patent at 10:10-20. The specification further states that "[w]hen a connection to the data repository occurs the version of software held resident in flash memory 309 is compared to the version held in the repository" and "[i]f the version of software held in flash memory 309 is older than the version in the data repository then a newer version is loaded into flash memory 309." "Thus, the frame device is configured to automatically update its software without requiring input from the user." '573 Patent at 11:53-60.

614. A POSITA would be enabled to implement this claim limitation.

11. "input to said user interface is permitted when said user is authenticated by said at least one server system"

615. Dr. Johnson alleges that the term "input to said user interface is permitted when said user is authenticated by said at least one server system" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A" and that a POSITA would not have understood how to practice the limitation without undue experimentation because the specification "does not limit the 'input' that the user interface will permit." Johnson ¶2042. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and to the extent this argument is incorporated by reference, Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field

of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

616. This element is sufficiently enabled. The '573 patent describes how input is given, for example, via a mouse or keyboard. '573 patent at 30:5-12. As has been discussed previously, the authentication process is not only thoroughly described in the '573 patent, but is also a term of art. The '573 patent also describes the user interface in detail. '573 patent at 6:62-65; 10:23-34; 11:64-12:22.

617. The specification of the '573 Patent describes that prior systems and devices "lack[] the ability to dynamically obtain image data from a networked data source and then display that data according to criteria established by an authorized user," '573 Patent at 1:50-53, and "[t]here are several different techniques for propagating data to devices connected to the network," but "these techniques cannot dynamically obtain image data from a networked data source and then display that data according to the behavior criteria established by an authorized user." '573 Patent at 2:47-61. To address these issues, the '573 Patent describes, for example, that "the picture box may be associated with any frame device 200-209 the user is authorized to control," '573 Patent at 15:21-23, that "frame devices 200n and web browser 262 are both controlled by an authorized user 283," '573 Patent at 15:59-61, and that RADIUS is used to authenticate users for dial-in and/or remote access via a data communication network. … Once a user is authenticated, RADIUS identifies what a user is authorized (permitted) to access …" '573 Patent at 16:59-65.

618. A POSITA would be enabled to implement this claim limitation.

12. "at least one frame device configured to operate according to preferences defined by a user"

619. Dr. Johnson alleges that the term "at least one frame device configured to operate according to preferences defined by a user" lacks written description support and/or lacks

enablement, alleging that the ’573 patent specification “does not describe what it means to operate a frame device according to preferences defined by a user,” while acknowledging that the patent specification describes “behavior characteristics.” Johnson ¶2043-44. Dr. Johnson does not meet his burden to show a lack of enablement or written description. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

620. This element is sufficiently described and enabled. The specification of the ’573 Patent describes that prior systems and devices did not “display the image data according to a set of predetermined preferences,” ’573 Patent at 3:40-43, that prior systems and devices “cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver’s preferences,” ’573 Patent at 4:4-6, and “lack the ability to automatically distribute data . . . according to a set of preferences determined by the user.” ’573 Patent at 4:7-9. To address these issues, the ’573 Patent describes, for example, that the frame device “is configured” to “obtain image data and to then display that data according to a set of preferences,” ’573 Patent at 8:35-38, that “data about each user and the preferences associated with that user may be held in the data repository,” ’573 Patent at 19:11-14, “[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device,” ’573 Patent at 19:17-20, “the behavior characteristics may be established by default or customized according to the user’s preferences,” ’573 Patent at 25:8-11, “the frame device obtains the behavioral characteristics set via the picture box, by accessing the data repository” and the frame device “loads the behavioral characteristics into flash memory.” ’573 Patent at 25:17-22.

621. Preferences are even further described in the ’573 Patent. In “one or more embodiments of the invention, the data format of the submitted image is modified to conform to

the preferences of the frame device," for example, if "the frame device . . . is capable of rendering JPEG images for display, the image will be converted from BMP format to JPEG format." '573 Patent at 26:66-27:6. "Dimensional aspects" such as "resolution" can also be altered. '573 Patent at 27:6-10. "Package data" provided to frame devices from the server can include "additional parameters needed to direct the behavior characteristics of the frame device," such as "timing information" that can define "the time the frame device is scheduled to dim display 313" and/or "the time the frame device is scheduled to connect to the data repository for an update." '573 Patent at 29:43-49, 11:35-40. A frame device that receives package data "loads the contents of the package into memory." '573 Patent at 29:55-57.

622. As shown above, there is ample written description support for this claim term and the specification contains ample disclosure of a frame device operating according to preferences defined by a user, and there is no reason given by Dr. Johnson that one skilled in the art could not make or use the invention.

623. This term is adequately described in the specification and a POSITA would be enabled to implement this claim limitation.

13. "[frame device] / [digital picture frame] comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs."

624. Dr. Johnson alleges that the claims of the '573 patent including the term "[frame device] / [digital picture frame] comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs" are indefinite because "the specification provides no parameters as to what it means to 'resemble' a picture frame or to be 'modeled' to do so." Johnson ¶2045. This assertion is incorrect.

625. A POSITA reading the '573 Patent would be able to understand the structure and parameters of such a device. As noted above, a claim term is definite if one skilled in the art would

understand what is claimed when the claim is read in light of the specification. First, the claim term does not refer to dimensions. Even if a claim element recites a relative dimensional element, such term is definite when one of ordinary skill in the art would have realized the dimension can be easily obtained or understood. One skilled in the art reading the '573 Patent would have easily realized the dimensionality of such a device.

626. The specification describes aspects of the invention such that "[e]ach frame device has a display region (e.g., an LCD) surrounded by a border region modeled to resemble a picture frame," "the border region may be comprised of wood, plastic, or any other aesthetically pleasing compound," and the "border region may be, for example, an actual picture frame with a paper matte board that surrounds a thin LCD display region." '573 Patent at 7:1-7; *see also id.* at 11:5-7, 13:19-31. In light of the disclosure of the '573 Patent, one skilled in the art would have realized the dimensions and appearance of the claimed "frame device comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs" to be easily obtained. I conclude that the claims are not indefinite.

B. The '930 Patent

1. "control the display of image data from said plurality of image data files in said image display region in accordance with said onboard software in said inside of said integrated housing"

627. Dr. Johnson alleges that the term "control the display of image data from said plurality of image data files in said image display region in accordance with said onboard software in said inside of said integrated housing" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1 to XIII.A.10, above," a POSITA would not have understood how to practice the limitation because the specification allegedly does not "detail[] how the processor performs this claimed functionality." Johnson ¶2046. Dr. Johnson does not meet his burden to

show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

628. This element is sufficiently enabled. The specification of the '930 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '930 Patent at 3:43-47, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '930 Patent at 4:5-8, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '930 Patent at 4:9-11. To address these issues, the '930 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data according to a set of preferences," '930 Patent at 8:31-34, that "the behavior characteristics may be established by default or customized according to the user's preferences," '930 Patent at 24:41-42, and that "the frame device obtains the behavioral characteristics set via the picture box, by accessing the data repository" and the frame device "loads the behavioral characteristics into flash memory." '930 Patent at 24:47-55.

629. The specification of the '930 Patent further describes that "[o]nboard software stored in memory provides each frame devices with a set of behavior characteristics that may be

customized by the user, or by any other person authorized to alter the frame device's behavior characteristics," '930 Patent at 10:33-36, that "[f]lash memory 309 provides the frame device with storage space for the image data," that "image data held in the data repository may be copied into flash memory 309 when a connection to the data repository occurs," that "[f]lash memory 309 may hold the onboard software that defines the functionality of the device," and that "[t]he mechanism and data used to control the behavior characteristics of the frame device is also stored in flash memory 309." '930 Patent at 11:7-17. Further, "[f]or example, some or all of the information stored in flash memory and/or DRAM may be inserted into a metadata file" that "may contain, for example, . . . an image display list . . . ." '930 Patent at 17:31-38.

630. A POSITA would be enabled to implement this claim limitation.

2. "engage a network medium in said inside of said integrated housing under the control of said processor"

631. Dr. Johnson alleges that the term "engage a network medium in said inside of said integrated housing under the control of said processor" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10., above," a POSITA would not have understood how to practice the limitation because the specification allegedly "does not mention, much less describe, the claimed 'communication circuitry'" and "does not explain how the communication circuitry operates 'under the control of said processor.'" Johnson ¶2047. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of

the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

632. This element is sufficiently enabled. The specification of the '930 Patent describes that prior systems and devices "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '930 Patent at 4:9-11. To address these issues, the '930 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data according to a set of preferences," '930 Patent at 8:31-34, that "the behavior characteristics may be established by default or customized according to the user's preferences," '930 Patent at 24:41-42, and that "the frame device obtains the behavioral characteristics set via the picture box, by accessing the data repository" and the frame device "loads the behavioral characteristics into flash memory." '930 Patent at 24:47-55. The '930 Patent further describes that "[c]ommunication interface 340 provides a two-way data communication coupling via a network link 341 to interconnection fabric 342," that "[c]ommunication interface 340 may be implemented in software or hardware form," that "[i]nterconnection fabric 342 represents any type of network configured to transmit data" and "may represent the Internet or any other type of easily accessible computer network," and that "interconnection fabric 342 couples the frame device to the data repository. '930 Patent at 12:28-53. Further, "CPU 305 is responsible for executing tasks for the frame device," '930 Patent at 10:36-37, and "CPU 305 communicates with the other components of the 45 frame device utilizing system bus 335." '930 Patent at 10:44-45. See also FIG. 3.

633. A POSITA would be enabled to implement this claim limitation.

3. "obtain image data from said plurality of image data files in said memory for rendering in said image display region"

634. Dr. Johnson alleges that the term "obtain image data from said plurality of image data files in said memory for rendering in said image display region" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in the subsections of Section XIII.B., above," a POSITA would not have understood how to practice the limitation because the specification allegedly does not "provide information about how this function should be achieved—no algorithm or special programming." Johnson ¶2048. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

635. This element is sufficiently enabled. The specification of the '930 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '930 Patent at 3:43-47, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '930 Patent at 4:5-8, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '930 Patent at 4:9-11. To address

these issues, the ’930 Patent describes, for example, that the frame device “is configured” to “obtain image data and to then display that data according to a set of preferences,” ’930 Patent at 8:31-34, that “the behavior characteristics may be established by default or customized according to the user’s preferences,” ’930 Patent at 24:41-42, and that “the frame device obtains the behavioral characteristics set via the picture box, by accessing the data repository” and the frame device “loads the behavioral characteristics into flash memory.” ’930 Patent at 24:47-55.

636. The specification of the ’930 Patent further describes that “[o]nboard software stored in memory provides each frame devices with a set of behavior characteristics that may be customized by the user, or by any other person authorized to alter the frame device's behavior characteristics,” ’930 Patent at 10:33-36, that “[f]lash memory 309 provides the frame device with storage space for the image data,” that “image data held in the data repository may be copied into flash memory 309 when a connection to the data repository occurs,” that “[f]lash memory 309 may hold the onboard software that defines the functionality of the device,” and that “[t]he mechanism and data used to control the behavior characteristics of the frame device is also stored in flash memory 309.” ’930 Patent at 11:7-17. Further, the specification states: “[f]or example, some or all of the information stored in flash memory and/or DRAM may be inserted into a metadata file” that “may contain, for example, . . . an image display list . . . .” ’930 Patent at 17:31-38.

637. The ’930 Patent further describes that “[i]mage files found in the package may be stored in DRAM until they are rendered for display,” ’930 Patent at 29:12-14, and that “[d]isplay 313 represents the display hardware used to render a visual representation of the image data.” ’930 Patent at 10:53-54.

638. A POSITA would be enabled to implement this claim limitation.

4. "automatically initiate communications with said first remote server system cross said network medium"

639. Dr. Johnson alleges that the term "automatically initiate communications with said first remote server system cross said network medium" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in the subsections of Section XIII.B., above," a POSITA would not have understood how to practice the limitation because the specification allegedly does not "provide information about how this function should be achieved. No algorithm or special programming is disclosed." Johnson ¶2049. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

640. This element is sufficiently enabled. The specification of the '930 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '930 Patent at 4:9-11. To address these issues, the '930 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '930 Patent at 8:31-34, that "data about each user and the preferences associated with that user may be held in the data repository," '930 Patent at 19:11-14, "[o]nce a frame device connects to the data repository, it [the

data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '930 Patent at 18:58-62.

641. The specification of the '930 Patent further explains that "[o]nce image data resides in the data repository, step **611** executes," "[a]t step **611**, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory." '930 Patent at 27:40-44. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '930 Patent at 28:65-29:2. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '930 Patent at 27:45-50.

642. A POSITA would be enabled to implement this claim limitation.

5. "send a request for image data to said first remote server system after initiating said communications"

643. Dr. Johnson alleges that the term "send a request for image data to said first remote server system after initiating said communications" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in the subsections of Section XIII.B., above" and that he "incorporate[s] those sections by reference fully herein." Johnson ¶2050. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of arguments with respect to other claim terms. To the extent

that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

644. This element is sufficiently enabled. The specification of the '930 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '930 Patent at 4:9-11. To address these issues, the '930 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '930 Patent at 8:31-34, that "data about each user and the preferences associated with that user may be held in the data repository," '930 Patent at 19:11-14, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '930 Patent at 18:58-62.

645. The specification of the '930 Patent further explains that "[o]nce image data resides in the data repository, step **611** executes," "[a]t step **611**, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory." '930 Patent at 27:40-44. The "data server . . . transmits package data to the frame device," where "[t]he

package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '930 Patent at 28:65-29:2. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '930 Patent at 27:45-50.

646. A POSITA would be enabled to implement this claim limitation.

6. "receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files"

647. Dr. Johnson alleges that the term "receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in the subsections of Section XIII.B., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2051. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be

considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

648. This element is sufficiently enabled. The specification of the '930 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '930 Patent at 4:9-11. To address these issues, the '930 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '930 Patent at 8:31-34, that "data about each user and the preferences associated with that user may be held in the data repository," '930 Patent at 19:11-14, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '930 Patent at 18:58-62.

649. The specification of the '930 Patent further explains that "[o]nce image data resides in the data repository, step **611** executes," "[a]t step **611**, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory." '930 Patent at 27:40-44. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '930 Patent at 28:65-29:2. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '930 Patent at 27:45-50.

650. A POSITA would be enabled to implement this claim limitation.

7. "authenticate said first remote server system prior to accepting said set of data from said first remote server system"

651. Dr. Johnson alleges that the term "authenticate said first remote server system prior to accepting said set of data from said first remote server system" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in the subsections of Section XIII.B., above" and "incorporate[s] those sections by reference fully herein." Johnson ¶2052. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

652. This element is sufficiently enabled. The '930 Patent describes, for example, that "a package may contain authentication information that provides frame device 200 with a way to verify whether package server 271 is authentic." '930 Patent at 17:27-29. The specification also states "[w]hen the communication session is initiated … the data server transmits data to the frame device. … [T]he frame device examines the data it received to determine if the data is the type of

data expected. For example, the frame device may authenticate the data by checking the size, contents, or encryption sequence associated with the data to determine if the transmitted data came from an authorized data server." '930 Patent at 28:25-39.

653. The specification also states that:

> During the communicate session frame device 200 initiates a GET command via path and thereby obtains an authentication file from package server 271. When frame device 200 obtains the authentication file, it determines if the authentication file is authentic by computing a checksum and comparing the result to an expected results file. If the comparison matches, frame device 200 "trusts" package server 271. When a trust relationship is established frame device 200 transmits package data to package server 271. In one more embodiments of the invention, frame device 200 tells package server 271 how much package data it will be sending (e.g. via a SIZE command) and then transmit that amount of data to package server 271 via a PUT command. For example, a content list and a log file may be transmitted to the server via the PUT command. Package server 271 then computes and compares the checksum information associated with the transmitted package data (e.g. metadata). Frame device 200 may also utilize the GET command to obtain additional packages. In one or more embodiments of the invention, the USER command and PASS command are modified to provide an additional layer of security. For example, the PASS command and the USER command may be modified to transmit and/or bounce back encrypted strings of data that are authenticated before access to the package data is permitted.

'930 Patent at 17:60-18:19.

654. A POSITA would be enabled to implement this claim limitation.

8. "obtain an updated version of said onboard software from said server"

655. Dr. Johnson alleges that the term "obtain an updated version of said onboard software from said server" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in the subsections of Section XIII.B., above," and "incorporate[s] those sections by reference fully herein." Johnson ¶2053. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any

argument regarding this specific unique element other than an incorporation by reference of arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

656. This element is sufficiently enabled. The specification of the '930 Patent describes that prior systems and devices "cannot be remotely updated, modified, or otherwise changed," and that "[f]or example, a new feature, such as the ability to obtain new images from a network, cannot be added by transmitting a software update to the device from a remote source." '930 Patent at 2:28-35. To address these issues, the '930 Patent describes, for example, that "[t]he software that provides the frame device with its operational logic may be automatically updated and/or upgraded without input from the user" and "[f]or example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device." '930 Patent at 10:1-7. The specification further states that "[w]hen a connection to the data repository occurs the version of software held resident in flash memory 309 is compared to the version held in the repository" "[i]f the version of software held in flash memory 309 is older than the version in the data repository then a newer version is loaded into flash memory

309," and "thus, the frame device is configured to automatically update its software without requiring input from the user." '930 Patent at 11:38-47.

657. A POSITA would be enabled to implement this claim limitation.

9. "replace said current version of said onboard software in said memory with said updated version"

658. Dr. Johnson alleges that the term "replace said current version of said onboard software in said memory with said updated version" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in the subsections of Section XIII.B., above" and that a POSITA would not have understood how to practice the limitation because the specification allegedly "does not explain how the replacement is performed." Johnson ¶2054. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

659. This element is sufficiently enabled. The specification of the '930 Patent describes that prior systems and devices "cannot be remotely updated, modified, or otherwise changed," and that "[f]or example, a new feature, such as the ability to obtain new images from a network, cannot be added by transmitting a software update to the device from a remote source." '930 Patent at

2:28-35. To address these issues, the ’930 Patent describes, for example, that “[t]he software that provides the frame device with its operational logic may be automatically updated and/or upgraded without input from the user” and “[f]or example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device.” ’930 Patent at 10:1-7. The specification further states that “[w]hen a connection to the data repository occurs the version of software held resident in flash memory 309 is compared to the version held in the repository” “[i]f the version of software held in flash memory 309 is older than the version in the data repository then a newer version is loaded into flash memory 309,” and “thus, the frame device is configured to automatically update its software without requiring input from the user.” ’930 Patent at 11:38-47.

660. A POSITA would be enabled to implement this claim limitation.

10. “obtain image data from said plurality of image data files in said memory for rendering in said image display region based on a value of said image display parameter”

661. Dr. Johnson alleges that the term “obtain image data from said plurality of image data files in said memory for rendering in said image display region based on a value of said image display parameter” lacks enablement because it “attempts to monopolize an entire class of things defined by their function,” and “for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in the subsections of Section XIII.B., above,” a POSITA would not have understood how to practice the limitation because the specification allegedly does not “mention[] an ‘image display parameter,’ much less describe how a value of said image display parameter is used to render an image.” Johnson ¶2055. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an “entire class of things defined by their function” solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the

claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

662. This element is sufficiently enabled. The specification of the '930 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '930 Patent at 3:43-47, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '930 Patent at 4:5-8, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '930 Patent at 4:9-11. To address these issues, the '930 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data according to a set of preferences," '930 Patent at 8:31-34, that "the behavior characteristics may be established by default or customized according to the user's preferences," '930 Patent at 24:41-42, and that "the frame device obtains the behavioral characteristics set via the picture box, by accessing the data repository" and the frame device "loads the behavioral characteristics into flash memory." '930 Patent at 24:47-55.

663. The specification of the '930 Patent further describes that "[o]nboard software stored in memory provides each frame devices with a set of behavior characteristics that may be customized by the user, or by any other person authorized to alter the frame device's behavior characteristics," '930 Patent at 10:33-36, that "[f]lash memory 309 provides the frame device with storage space for the image data," that "image data held in the data repository may be copied into

flash memory 309 when a connection to the data repository occurs," that "[f]lash memory 309 may hold the onboard software that defines the functionality of the device," and that "[t]he mechanism and data used to control the behavior characteristics of the frame device is also stored in flash memory 309." '930 Patent at 11:7-17. Further, "[f]or example, some or all of the information stored in flash memory and/or DRAM may be inserted into a metadata file" that "may contain, for example, . . . an image display list . . . ." '930 Patent at 17:31-38. The "metadata file may also contain new or additional parameters and/or functionality that are to be added to the device (e.g. an on board software update)" and "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '930 Patent at 28:48-29:2.

664. The '930 Patent further describes that "[i]mage files found in the package may be stored in DRAM until they are rendered for display," '930 Patent at 29:12-14, and that "[d]isplay 313 represents the display hardware used to render a visual representation of the image data." '930 Patent at 10:53-54.

665. A POSITA would be enabled to implement this claim limitation.

C. The '562 Patent

1. "displaying content comprising image data received from a server system via a communications network on a display screen"

666. Dr. Johnson alleges that the term "displaying content comprising image data received from a server system via a communications network on a display screen" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2056. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other

than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

667. This element is sufficiently enabled. The specification of the '562 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '562 Patent at 3:52-55, that "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '562 Patent at 4:15-19, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '562 Patent at 4:19-21. To address these issues, the '562 Patent describes, for example, that the frame device "is a self-configuring digital picture frame that obtains images for display and/or software from a data repository via an interconnection fabric (e.g. a computer network)," and "[e]ach frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences," '562 Patent at 8:43-49, that "data about each user and the preferences associated with that user may be held in the data repository," '562 Patent at 19:17-19, and that "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the

information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '562 Patent at 19:22-25.

668. The specification of the '562 Patent further explains that "[o]nce image data resides in the data repository, step **611** executes," "[a]t step **611**, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory." '562 Patent at 28:12-17. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '562 Patent at 29:29-44. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '562 Patent at 28:17-23.

669. The specification of the '562 Patent further describes that "[o]nboard software stored in memory provides each frame devices with a set of behavior characteristics that may be customized by the user, or by any other person authorized to alter the frame device's behavior characteristics," '562 Patent at 10:51-55, that "[f]lash memory 309 provides the frame device with storage space for the image data," that "image data held in the data repository may be copied into flash memory 309 when a connection to the data repository occurs," that "[f]lash memory 309 may hold the onboard software that defines the functionality of the device," and that "[t]he mechanism and data used to control the behavior characteristics of the frame device is also stored in flash memory 309." '562 Patent at 11:25-35. Further, "[f]or example, some or all of the information

stored in flash memory and/or DRAM may be inserted into a metadata file" that "may contain, for example, . . . an image display list." '562 Patent at 17:61-18:1. The "metadata file may also contain new or additional parameters and/or functionality that are to be added to the device (e.g. an on board software update)" and "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '562 Patent at 29:22-44.

670. The '562 Patent further describes that "[i]mage files found in the package may be stored in DRAM until they are rendered for display," '562 Patent at 29:54-55, and that "[d]isplay 313 represents the display hardware used to render a visual representation of the image data." '562 Patent at 11:4-5.

671. A POSITA would be enabled to implement this claim limitation.

2. "control display of said content on said display screen"

672. Dr. Johnson alleges that the term "control display of said content on said display screen" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above," and he "incorporate[s] those sections by reference fully herein." Johnson ¶2057. Dr. Johnson also alleges that a POSITA would not have understood how to practice the limitation without undue experimentation because the specification allegedly does not "identify how [the video controller] controls the image data," and that "[n]o special programming or algorithm is disclosed in the specification." Johnson ¶2057. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any

supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

673. This element is sufficiently enabled. The specification of the '562 Patent describes that:

> Display 313 represents the display hardware used to render a visual representation of the image data. In one or more embodiments of the invention, display 313 is a Liquid Crystal Display (LCD). However, the invention also anticipates the use of other display mechanisms that are capable of rendering an image for display. Flat panel technologies such as plasma displays, Field Emission Displays (FED), or improved Cathode Ray Tube (CRT) monitors, for example, may also be utilized to display images. Display 313 is surrounded with a border region modeled to resemble a traditional picture frame. Display 313 is a low profile LCD designed to minimize the prevalence of display 313. Thus, the emphasis is on the picture frame rather than the LCD. Controller 311 controls the image data output to display 313. For example, if LCD hardware it utilized to display image data, controller 311 is an LCD controller. DRAM 312 is the memory controller 311 uses to prepare image data for display on display 313. DRAM 312, for example, may be utilized for purposes of frame buffering. Dithering may be performed on the frame device in order to improve the quality of images displayed on display 313.

'562 Patent at 11:4-24.

674. A POSITA would be enabled to implement this claim limitation.

3. "communicate with said server system via said communications network"

675. Dr. Johnson alleges that the term "communicate with said server system via said communications network" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above" and he "incorporate[s] those

sections by reference fully herein." Johnson ¶2058. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

676. This element is sufficiently enabled. The specification of the '562 Patent describes that prior systems and devices "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '562 Patent at 4:19-21. To address these issues, the '562 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data according to a set of preferences," '562 Patent at 8:44-49, and that "the frame device obtains the behavioral characteristics set via the picture box, by accessing the data repository" and the frame device "loads the behavioral characteristics into flash memory." '562 Patent at 25:16-21. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '562 Patent at 29:19-25.

677. The '562 Patent further describes that "[c]ommunication interface 340 provides a two-way data communication coupling via a network link 341 to interconnection fabric 342," that "[c]ommunication interface 340 may be implemented in software or hardware form," that "[i]nterconnection fabric 342 represents any type of network configured to transmit data" and "may represent the Internet or any other type of easily accessible computer network," and that "interconnection fabric 342 couples the frame device to the data repository. '562 Patent at 12:47-13:6. See also '562 Patent at FIG. 3.

678. A POSITA would be enabled to implement this claim limitation.

4. "upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network"

679. Dr. Johnson alleges that the term "upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above," and he "incorporate[s] those sections by reference fully herein." Johnson ¶2059. Dr. Johnson also alleges that a POSITA would not have understood how to practice the limitation without undue experimentation because the specification allegedly "does not use the term 'communications source' and does not specify its meaning." Johnson ¶2059. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In

addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

680. This element is sufficiently enabled. The specification of the '562 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '562 Patent at 4:19-21. To address these issues, the '562 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '562 Patent at 8:46-49, that "data about each user and the preferences associated with that user may be held in the data repository," '562 Patent at 19:17-19, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '562 Patent at 19:22-25.

681. The '562 Patent further describes that "[o]nce the frame device is connected to a power source and a telephone line, for example, the device is configured to automatically access the data repository without any further user input," '562 Patent at 6:63-66, that "[t]he initialization process begins at step 800 when the frame device is connected to a power source and a communication medium such as a telephone line or network connection" and that "[a]t step 803, the frame device initiates a connection to the data repository utilizing an interconnection fabric." '562 Patent at 24:29-38.

682. The specification of the '562 Patent further explains that "[o]nce image data resides in the data repository, step **611** executes," "[a]t step **611**, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data

repository utilizing the interconnection fabric and download the image data into memory." '562 Patent at 28:12-17. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '562 Patent at 29:29-44. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '562 Patent at 28:17-23.

683. A POSITA would be enabled to implement this claim limitation.

5. "sending by said apparatus said unique identifier to said server system"

684. Dr. Johnson alleges that the term "sending by said apparatus said unique identifier to said server system" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above," and he "incorporate[s] those sections by reference fully herein." Johnson ¶2060. Dr. Johnson also alleges that a POSITA would not have understood how to practice the limitation without undue experimentation because the specification allegedly "does not specify how the identifier is sent over the generic network to the server system." Johnson ¶2060. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual

claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

685. This element is sufficiently enabled. The specification of the '562 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '562 Patent at 4:19-21. To address these issues, the '562 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '562 Patent at 8:46-49, that "data about each user and the preferences associated with that user may be held in the data repository," '562 Patent at 19:17-19, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '562 Patent at 19:22-25.

686. The '562 Patent further describes that "[o]nce the frame device is connected to a power source and a telephone line, for example, the device is configured to automatically access the data repository without any further user input," '562 Patent at 6:63-66, that "[t]he initialization process begins at step 800 when the frame device is connected to a power source and a communication medium such as a telephone line or network connection," and that "[a]t step 803, the frame device initiates a connection to the data repository utilizing an interconnection fabric." '562 Patent at 24:29-3. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the

frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '562 Patent at 29:29-44.

687. The specification also describes that "[t]he frame device obtains the information it needs to initiate the connection from flash memory (e.g. phone number information, unique identifier such as a serial number, and password information)," '562 Patent at 28:36-39, and "[o]nce the session is established, frame device 200 transmits a unique identifier (e.g. user/frameID)." '562 Patent at 18:10-11.

688. A POSITA would be enabled to implement this claim limitation.

6. "sending by said apparatus said version identifier to said server system"

689. Dr. Johnson alleges that the term "sending by said apparatus said version identifier to said server system" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above," and he "incorporate[s] those sections by reference fully herein." Johnson ¶2061. Dr. Johnson also alleges that a POSITA would not have understood how to practice the limitation without undue experimentation because the specification allegedly "does not use the term 'version identifier'" and "does not describe the frame device sending the version number to a server system, much less how it is performed." Johnson ¶2061. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged

experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

690. This element is sufficiently enabled. The specification of the '562 Patent describes that prior systems and devices "cannot be remotely updated, modified, or otherwise changed," and that "[f]or example, a new feature, such as the ability to obtain new images from a network, cannot be added by transmitting a software update to the device from a remote source." '562 Patent at 2:34-39. To address these issues, the '562 Patent describes, for example, that "[t]he software that provides the frame device with its operational logic may be automatically updated and/or upgraded without input from the user" and "[f]or example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device." '562 Patent at 10:19-25. The specification further states that "[w]hen a connection to the data repository occurs the version of software held resident in flash memory 309 is compared to the version held in the repository," "[i]f the version of software held in flash memory 309 is older than the version in the data repository then a newer version is loaded into flash memory 309," and "thus, the frame device is configured to automatically update its software without requiring input from the user." '562 Patent at 11:60-67.

691. A POSITA would be enabled to implement this claim limitation.

7. "prompting by said apparatus a user of said apparatus to create an account at said server system"

692. Dr. Johnson alleges that the term "prompting by said apparatus a user of said apparatus to create an account at said server system" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above," which he

"incorporate[s] those sections by reference fully herein." Johnson ¶2062. Dr. Johnson also alleges that a POSITA would not have understood how to practice the limitation without undue experimentation because the specification allegedly fails to specify "how [the limitation] is performed." Johnson ¶2062. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

693. This element is sufficiently enabled. The specification of the '562 Patent describes "[i]f a record for the frame device is not located, step 807 executes and an image prompting the user to create a picture box account associated with that frame device is displayed to the user," '562 Patent at 24:49-52, "[w]hen a user initializes a frame device, that frame device becomes associated with a picture box," and "[f]or example, each frame device 200-209 is uniquely identified (e.g. by a serial number, address, digital signature, or other identifier) and associated with a particular picture box (e.g. an account at a website)." '562 Patent at 21:40-45.

694. A POSITA would be enabled to implement this claim limitation.

8. "receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system"

695. Dr. Johnson alleges that the term "receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above" and that he "incorporate[s] those sections by reference fully herein." Johnson ¶2063. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

696. This element is sufficiently enabled. The specification of the '562 Patent describes that prior systems and devices "cannot be remotely updated, modified, or otherwise changed," and that "[f]or example, a new feature, such as the ability to obtain new images from a network, cannot be added by transmitting a software update to the device from a remote source." '562 Patent at 2:34-39. To address these issues, the '562 Patent describes, for example, that "[t]he software that provides the frame device with its operational logic may be automatically updated and/or upgraded

without input from the user" and "[f]or example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device." '562 Patent at 10:19-25. The specification further states that "[w]hen a connection to the data repository occurs the version of software held resident in flash memory 309 is compared to the version held in the repository," "[i]f the version of software held in flash memory 309 is older than the version in the data repository then a newer version is loaded into flash memory 309," and "thus, the frame device is configured to automatically update its software without requiring input from the user." '562 Patent at 11:60-67.

697. The '562 Patent further states "[t]he data server executes step 1016 where it transmits package data to the frame device" and "[t]he package data may contain … software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '562 Patent at 29:39-44.

698. The '562 Patent further describes that "[a]pplication code may be embodied in any form of computer program product" and "[a] computer program product comprises a medium configured to store or transport computer readable code, or in which computer readable code may be embedded." '562 Patent at 31:16-20.

699. A POSITA would be enabled to implement this claim limitation.

9. "updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions"

700. Dr. Johnson alleges that the term "updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above" and that he "incorporate[s] those sections by reference fully herein." Johnson ¶2064. Dr. Johnson does not meet his burden to show a lack of enablement, first and

foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

701. This element is sufficiently enabled. The specification of the '562 Patent describes that prior systems and devices "cannot be remotely updated, modified, or otherwise changed," and that "[f]or example, a new feature, such as the ability to obtain new images from a network, cannot be added by transmitting a software update to the device from a remote source." '562 Patent at 2:34-39. To address these issues, the '562 Patent describes, for example, that "[t]he software that provides the frame device with its operational logic may be automatically updated and/or upgraded without input from the user" and "[f]or example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device." '562 Patent at 10:19-25. The specification further states that "[w]hen a connection to the data repository occurs the version of software held resident in flash memory 309 is compared to the version held in the repository," "[i]f the version of software held in flash memory 309 is older than the version in the data repository then a newer version is loaded into

flash memory 309," and "thus, the frame device is configured to automatically update its software without requiring input from the user." '562 Patent at 11:60-67.

702. The '562 Patent further states "[o]nce the package is received by the frame device step 1018 executes," "[t]he frame device disconnects and begins to unpackage the package data," and "[i]f the package data is compressed, the frame device decompresses the package and loads the contents of the package into memory." '562 Patent at 29:46-54.

703. The '562 Patent further describes that "[a]pplication code may be embodied in any form of computer program product" and "[a] computer program product comprises a medium configured to store or transport computer readable code, or in which computer readable code may be embedded." '562 Patent at 31:16-20.

704. A POSITA would be enabled to implement this claim limitation.

10. "receiving by said apparatus updated content from said server system"

705. Dr. Johnson alleges that the term "receiving by said apparatus updated content from said server system" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2065. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined

by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

706. This element is sufficiently enabled. The specification of the '562 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '562 Patent at 4:19-21. To address these issues, the '562 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '562 Patent at 8:46-49, that "data about each user and the preferences associated with that user may be held in the data repository," '562 Patent at 19:17-19, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '562 Patent at 19:22-25.

707. The '562 Patent further describes that "[o]nce the frame device is connected to a power source and a telephone line, for example, the device is configured to automatically access the data repository without any further user input," '562 Patent at 6:63-66, that "[t]he initialization process begins at step 800 when the frame device is connected to a power source and a communication medium such as a telephone line or network connection," and that "[a]t step 803, the frame device initiates a connection to the data repository utilizing an interconnection fabric." '562 Patent at 24:29-38.

708. The specification of the '562 Patent further explains that "[o]nce image data resides in the data repository, step 611 executes," "[a]t step 611, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data

repository utilizing the interconnection fabric and download the image data into memory." '562 Patent at 28:12-17. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '562 Patent at 29:29-44. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user." '562 Patent at 28:17-23.

709. A POSITA would be enabled to implement this claim limitation.

11. "displaying by said apparatus said updated content on said display screen"

710. Dr. Johnson alleges that the term "displaying by said apparatus said updated content on said display screen" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Section XIII.B., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2066. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged

experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

711. This element is sufficiently enabled. The specification of the '562 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '562 Patent at 3:52-55, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '562 Patent at 4:15-19, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '562 Patent at 4:19-21. To address these issues, the '562 Patent describes, for example, that the frame device "is a self-configuring digital picture frame that obtains images for display and/or software from a data repository via an interconnection fabric (e.g. a computer network)," and "[e]ach frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences," '562 Patent at 8:43-49, that "data about each user and the preferences associated with that user may be held in the data repository," '562 Patent at 19:17-19, and that "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '562 Patent at 19:22-25.

712. The specification of the '562 Patent further explains that "[o]nce image data resides in the data repository, step 611 executes," "[a]t step 611, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory." '562 Patent at 28:12-17. The "data server . . . transmits package data to the frame device," where "[t]he

package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '562 Patent at 29:29-44. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '562 Patent at 28:17-23.

713. The '562 Patent further describes that "[i]mage files found in the package may be stored in DRAM until they are rendered for display," '562 Patent at 29:54-55, and that "[d]isplay 313 represents the display hardware used to render a visual representation of the image data." '562 Patent at 11:4-5.

714. A POSITA would be enabled to implement this claim limitation.

D. The '656 Patent

1. "displaying image data received from a server system"

715. Dr. Johnson alleges that the term "displaying image data received from a server system" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2067. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems,

or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

716. This element is sufficiently enabled. The specification of the '656 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '656 patent at 3:47-50, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," '656 patent at 4:9-12, and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '656 patent at 4:13-15. To address these issues, the '656 Patent describes, for example, that the frame device "is a self-configuring digital picture frame that obtains images for display and/or software from a data repository via an interconnection fabric (e.g. a computer network)," and "[e]ach frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences," '656 patent at 8:31-37, that "data about each user and the preferences associated with that user may be held in the data repository," '656 patent at 19:57-59, and that "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '656 patent at 19:61-65.

717. The specification of the '656 Patent further explains that "[o]nce image data resides in the data repository, step 611 executes," "[a]t step 611, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data

repository utilizing the interconnection fabric and download the image data into memory." '656 patent at 28:12-17. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '656 patent at 29:29-44. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '656 patent at 28:17-23.

718. The specification of the '656 Patent further describes that "[o]nboard software stored in memory provides each frame devices with a set of behavior characteristics that may be customized by the user, or by any other person authorized to alter the frame device's behavior characteristics," '656 patent at 10:35-38, that "[f]lash memory 309 provides the frame device with storage space for the image data," that "image data held in the data repository may be copied into flash memory 309 when a connection to the data repository occurs," that "[f]lash memory 309 may hold the onboard software that defines the functionality of the device," and that "[t]he mechanism and data used to control the behavior characteristics of the frame device is also stored in flash memory 309." '656 patent at 11:9-19. Further, the '656 Patent provides "[f]or example, some or all of the information stored in flash memory and/or DRAM may be inserted into a metadata file" that "may contain, for example, . . . an image display list . . . ." '656 patent at 17:37-42. The "metadata file may also contain new or additional parameters and/or functionality that are to be added to the device (e.g. an on board software update)" and "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional

parameters needed to direct the behavior characteristics of the frame device." '656 patent at 28:49-29:6.

719. The '656 Patent further describes that "[i]mage files found in the package may be stored in DRAM until they are rendered for display," '656 patent at 29:17-19, and that "[d]isplay 313 represents the display hardware used to render a visual representation of the image data." '656 patent at 10:55-56.

720. A POSITA would be enabled to implement this claim limitation.

2. "displaying said image data"

721. Dr. Johnson alleges that the term "displaying said image data" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2068. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

722. This element is sufficiently enabled. The specification of the ’656 Patent describes that prior systems and devices did not “display the image data according to a set of predetermined preferences,” ’656 patent at 3:47-50, that prior systems and devices “cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver’s preferences,” ’656 patent at 4:9-12, and “lack the ability to automatically distribute data . . . according to a set of preferences determined by the user.” ’656 patent at 4:13-15. To address these issues, the ’656 Patent describes, for example, that the frame device “is a self-configuring digital picture frame that obtains images for display and/or software from a data repository via an interconnection fabric (e.g. a computer network),” and “[e]ach frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences,” ’656 patent at 8:31-37, that “data about each user and the preferences associated with that user may be held in the data repository,” ’656 patent at 19:57-59, and that “[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device.” ’656 patent at 19:61-65.

723. The specification of the ’656 Patent further explains that “[o]nce image data resides in the data repository, step 611 executes,” “[a]t step 611, the frame device obtains the image data set residing at the data repository,” and “[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory.” ’656 patent at 28:12-17. The “data server . . . transmits package data to the frame device,” where “[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device.” ’656 patent at 29:29-44. The “frame device periodically connects to the data

repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '656 patent at 28:17-23.

724. The specification of the '656 Patent further describes that "[o]nboard software stored in memory provides each frame devices with a set of behavior characteristics that may be customized by the user, or by any other person authorized to alter the frame device's behavior characteristics," '656 patent at 10:35-38, that "[f]lash memory 309 provides the frame device with storage space for the image data," that "image data held in the data repository may be copied into flash memory 309 when a connection to the data repository occurs," that "[f]lash memory 309 may hold the onboard software that defines the functionality of the device," and that "[t]he mechanism and data used to control the behavior characteristics of the frame device is also stored in flash memory 309." '656 patent at 11:9-19. Further, the specification states "[f]or example, some or all of the information stored in flash memory and/or DRAM may be inserted into a metadata file" that "may contain, for example, . . . an image display list . . . ." '656 patent at 17:37-42. The "metadata file may also contain new or additional parameters and/or functionality that are to be added to the device (e.g. an on board software update)" and "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '656 patent at 28:49-29:6.

725. The '656 Patent further describes that "[i]mage files found in the package may be stored in DRAM until they are rendered for display," '656 patent at 29:17-19, and that "[d]isplay

313 represents the display hardware used to render a visual representation of the image data." '656 patent at 10:55-56.

726. A POSITA would be enabled to implement this claim limitation.

3. "communicate via a communications network"

727. Dr. Johnson alleges that the term "communicate via a communications network" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and that he "incorporate[s] those sections by reference fully herein." Johnson ¶2069. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

728. This element is sufficiently enabled. The specification of the '656 Patent describes that prior systems and devices "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '656 patent at 4:13-15. To address these issues, the '656 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data according to a set of preferences," '656 patent at 8:31-37, and that "the frame

device obtains the behavioral characteristics set via the picture box, by accessing the data repository" and the frame device "loads the behavioral characteristics into flash memory." '656 patent at 24:54-56. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '656 patent at 29:1-6.

729. The '656 Patent further describes that "[c]ommunication interface 340 provides a two-way data communication coupling via a network link 341 to interconnection fabric 342," that "[c]ommunication interface 340 may be implemented in software or hardware form," that "[i]nterconnection fabric 342 represents any type of network configured to transmit data" and "may represent the Internet or any other type of easily accessible computer network," and that "interconnection fabric 342 couples the frame device to the data repository. '656 patent at 12:32-57. See also '656 patent at FIG. 3.

730. A POSITA would be enabled to implement this claim limitation.

4. "controlling the operation of said display device"

731. Dr. Johnson alleges that the term "controlling the operation of said display device" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2070. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be

read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

732. This element is sufficiently enabled. The '656 Patent describes, for example, that "[t]he software that provides the frame device with its operational logic may be automatically updated and/or upgraded without input from the user" that "[f]or example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device," '656 patent at 10:4-9, and that "flash memory 309 may hold the onboard software that defines the functionality of the device." '656 patent at 11:15-19. The specification further states that "[a]pplication code may be embodied in any form of computer program product" and "[a] computer program product comprises a medium configured to store or transport computer readable code, or in which computer readable code may be embedded." '656 patent at 30:43-47.

733. A POSITA would be enabled to implement this claim limitation.

5. "causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system"

734. Dr. Johnson alleges that the term "causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections

XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2071. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

735. This element is sufficiently enabled. The specification of the '656 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '656 patent at 4:13-15. To address these issues, the '656 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '656 patent at 8:31-37, that "data about each user and the preferences associated with that user may be held in the data repository," '656 patent at 19:57-59, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '656 patent at 19:61-65.

736. The ’656 Patent further describes that “[o]nce the frame device is connected to a power source and a telephone line, for example, the device is configured to automatically access the data repository without any further user input,” ’656 patent at 6:53-56, that “[t]he initialization process begins at step 800 when the frame device is connected to a power source and a communication medium such as a telephone line or network connection,” and that “[a]t step 803, the frame device initiates a connection to the data repository utilizing an interconnection fabric.” ’656 patent at 23:64-24:7.

737. The specification of the ’656 Patent further explains that “[o]nce image data resides in the data repository, step 611 executes,” “[a]t step 611, the frame device obtains the image data set residing at the data repository,” and “[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory.” ’656 patent at 27:44-48. The “data server . . . transmits package data to the frame device,” where “[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device.” ’656 patent at 29:1-6. The “frame device periodically connects to the data repository,” the “frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box,” and the “device may also automatically determine the connection frequency without requiring input from the user. ’656 patent at 27:49-53.

738. A POSITA would be enabled to implement this claim limitation.

6. “sending a request for image data to said server system via said communications network”

739. Dr. Johnson alleges that the term “sending a request for image data to said server system via said communications network” lacks enablement “for the reasons I provided in the

subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2072. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

740. This element is sufficiently enabled. The specification of the '656 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '656 patent at 4:13-15. To address these issues, the '656 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '656 patent at 8:31-37, that "data about each user and the preferences associated with that user may be held in the data repository," '656 patent at 19:57-59, and "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '656 patent at 19:61-65.

741. The specification of the '656 Patent further explains that "[o]nce image data resides in the data repository, step 611 executes," "[a]t step 611, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory." '656 patent at 27:44-48. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '656 patent at 29:1-6. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user." '656 Patent at 27:49-53. The specification also states "[f]or example, the data server may enter binary mode and transmit an authentication file to the frame device in response to the device's request for data (e.g. via the GET command)." '656 Patent at 28:35-37.

742. A POSITA would be enabled to implement this claim limitation.

7. "receiving image data and authentication information from said server system in response to said request"

743. Dr. Johnson alleges that the term "receiving image data and authentication information from said server system in response to said request" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2073. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that

Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

744. This element is sufficiently enabled. The specification of the '656 Patent describes that prior systems and devices "lack the ability to automatically distribute data." '656 patent at 4:13-15. To address these issues, the '656 Patent describes, for example, that the frame device "is configured" to "obtain image data and to then display that data," '656 patent at 8:31-37, that "data about each user and the preferences associated with that user may be held in the data repository," '656 patent at 19:57-59, "[o]nce a frame device connects to the data repository, it [the data repository] utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device." '656 patent at 19:61-65.

745. The specification of the '656 Patent further explains that "[o]nce image data resides in the data repository, step 611 executes," "[a]t step 611, the frame device obtains the image data set residing at the data repository," and "[f]or example, the frame device may connect to the data repository utilizing the interconnection fabric and download the image data into memory." '656 patent at 27:44-48. The "data server . . . transmits package data to the frame device," where "[t]he package data may contain one or more images that are scheduled for display on the frame device,

software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '656 patent at 29:1-6. The "frame device periodically connects to the data repository," the "frequency of the connections may be determined by the user via the picture box interface or by a party authorized to access the picture box," and the "device may also automatically determine the connection frequency without requiring input from the user. '656 patent at 27:49-53. The specification also states "[f]or example, the data server may enter binary mode and transmit an authentication file to the frame device in response to the device's request for data (e.g. via the GET command)." '656 patent at 28:35-37.

746. A POSITA would be enabled to implement this claim limitation.

8. "authenticating said server system"

747. Dr. Johnson alleges that the term "authenticating said server system" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2076. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation

would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

748. This element is sufficiently enabled. The '656 Patent describes, for example, that "a package may contain authentication information that provides frame device 200 with a way to verify whether package server 271 is authentic." '656 patent at 17:31-33. The specification also states "[w]hen the communication session is initiated … the data server transmits data to the frame device. … [T]he frame device examines the data it received to determine if the data is the type of data expected. For example, the frame device may authenticate the data by checking the size, contents, or encryption sequence associated with the data to determine if the transmitted data came from an authorized data server." '656 patent at 28:29-43.

749. The specification also states that:

> During the communicate session frame device 200 initiates a GET command via path and thereby obtains an authentication file from package server 271. When frame device 200 obtains the authentication file, it determines if the authentication file is authentic by computing a checksum and comparing the result to an expected results file. If the comparison matches, frame device 200 "trusts" package server 271. When a trust relationship is established frame device 200 transmits package data to package server 271. In one more embodiments of the invention, frame device 200 tells package server 271 how much package data it will be sending (e.g. via a SIZE command) and then transmit that amount of data to package server 271 via a PUT command. For example, a content list and a log file may be transmitted to the server via the PUT command. Package server 271 then computes and compares the checksum information associated with the transmitted package data (e.g. metadata). Frame device 200 may also utilize the GET command to obtain additional packages. In one or more embodiments of the invention, the USER command and PASS command are modified to provide an additional layer of security. For example, the PASS command and the USER command may be modified to transmit and/or bounce back encrypted strings of data that are authenticated before access to the package data is permitted.

'656 patent at 17:65-18:22.

750. A POSITA would be enabled to implement this claim limitation.

9. "storing said received image data in said memory"

751. Dr. Johnson alleges that the term "storing said received image data in said memory" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2075. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

752. This element is sufficiently enabled. The specification of the '656 Patent describes that "[o]nboard software stored in memory provides each frame devices with a set of behavior characteristics that may be customized by the user, or by any other person authorized to alter the frame device's behavior characteristics," '656 patent at 10:35-38, that "[f]lash memory 309 provides the frame device with storage space for the image data," that "image data held in the data repository may be copied into flash memory 309 when a connection to the data repository occurs," that "[f]lash memory 309 may hold the onboard software that defines the functionality of the

device," and that "[t]he mechanism and data used to control the behavior characteristics of the frame device is also stored in flash memory 309." '656 patent at 11:9-19. Further, "[f]or example, some or all of the information stored in flash memory and/or DRAM may be inserted into a metadata file" that "may contain, for example, . . . an image display list . . . ." '656 patent at 17:37-42. The "metadata file may also contain new or additional parameters and/or functionality that are to be added to the device (e.g. an on board software update)" and "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '656 patent at 28:49-29:6.

753. A POSITA would be enabled to implement this claim limitation.

10. "displaying said image data on said display screen"

754. Dr. Johnson alleges that the term "displaying said image data on said display screen" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" that he "incorporate[s] those sections by reference fully herein." Johnson ¶2076. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged

experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

755. This element is sufficiently enabled. The specification of the '656 Patent describes that "[o]nboard software stored in memory provides each frame devices with a set of behavior characteristics that may be customized by the user, or by any other person authorized to alter the frame device's behavior characteristics," '656 patent at 10:35-38, that "[f]lash memory 309 provides the frame device with storage space for the image data," that "image data held in the data repository may be copied into flash memory 309 when a connection to the data repository occurs," that "[f]lash memory 309 may hold the onboard software that defines the functionality of the device," and that "[t]he mechanism and data used to control the behavior characteristics of the frame device is also stored in flash memory 309." '656 patent at 11:9-19. Further, "[f]or example, some or all of the information stored in flash memory and/or DRAM may be inserted into a metadata file" that "may contain, for example, . . . an image display list . . . ." '656 patent at 17:37-42. The "metadata file may also contain new or additional parameters and/or functionality that are to be added to the device (e.g. an on board software update)" and "[t]he package data may contain one or more images that are scheduled for display on the frame device, software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '656 patent at 28:49-29:6.

756. The '656 Patent further describes that "[i]mage files found in the package may be stored in DRAM until they are rendered for display," '656 patent at 29:17-19, and that "[d]isplay 313 represents the display hardware used to render a visual representation of the image data." '656 patent at 10:55-56.

757. A POSITA would be enabled to implement this claim limitation.

11. "receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network"

758. Dr. Johnson alleges that the term "receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network" lacks enablement "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2077. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

759. This element is sufficiently enabled. The specification of the '656 Patent describes that prior systems and devices "cannot be remotely updated, modified, or otherwise changed," and that "[f]or example, a new feature, such as the ability to obtain new images from a network, cannot be added by transmitting a software update to the device from a remote source." '656 patent at 2:32-37. To address these issues, the '656 Patent describes, for example, that "[t]he software that

provides the frame device with its operational logic may be automatically updated and/or upgraded without input from the user" and "[f]or example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device." '656 patent at 10:4-9. The specification further states that "[w]hen a connection to the data repository occurs the version of software held resident in flash memory 309 is compared to the version held in the repository," "[i]f the version of software held in flash memory 309 is older than the version in the data repository then a newer version is loaded into flash memory 309," and "thus, the frame device is configured to automatically update its software without requiring input from the user." '656 patent at 11:42-49.

760. The '656 Patent further states "[t]he data server executes step 1016 where it transmits package data to the frame device" and "[t]he package data may contain … software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '656 patent at 29:1-6.

761. The '656 Patent further describes that "[a]pplication code may be embodied in any form of computer program product" and "[a] computer program product comprises a medium configured to store or transport computer readable code, or in which computer readable code may be embedded." '656 patent at 30:43-47.

762. A POSITA would be enabled to implement this claim limitation.

12. "automatically updating said computer readable instructions for controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device"

763. Dr. Johnson alleges that the term "automatically updating said computer readable instructions for controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device" lacks enablement "for

the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above" and he "incorporate[s] those sections by reference fully herein." Johnson ¶2078. Dr. Johnson does not meet his burden to show a lack of enablement, first and foremost because he does not make any argument regarding this specific unique element other than an incorporation by reference of unspecified arguments with respect to other claim terms. To the extent that Dr. Johnson is arguing that the Asserted Claims claim an "entire class of things defined by their function" solely with respect to this element, I disagree, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

764. This element is sufficiently enabled. The specification of the '656 Patent describes that prior systems and devices "cannot be remotely updated, modified, or otherwise changed," and that "[f]or example, a new feature, such as the ability to obtain new images from a network, cannot be added by transmitting a software update to the device from a remote source." '656 patent at 2:32-37. To address these issues, the '656 Patent describes, for example, that "[t]he software that provides the frame device with its operational logic may be automatically updated and/or upgraded without input from the user" and "[f]or example, when the frame device connects to the data repository the device may elect to update and/or modify the operating system software located inside the frame device." '656 patent at 10:4-9. The specification further states that "[w]hen a

connection to the data repository occurs the version of software held resident in flash memory 309 is compared to the version held in the repository," "[i]f the version of software held in flash memory 309 is older than the version in the data repository then a newer version is loaded into flash memory 309," and "thus, the frame device is configured to automatically update its software without requiring input from the user." '656 patent at 11:42-49.

765. The '656 Patent further states "[t]he data server executes step 1016 where it transmits package data to the frame device" and "[t]he package data may contain … software updates, and additional parameters needed to direct the behavior characteristics of the frame device." '656 patent at 29:1-6.

766. The '656 Patent further describes that "[a]pplication code may be embodied in any form of computer program product" and "[a] computer program product comprises a medium configured to store or transport computer readable code, or in which computer readable code may be embedded." '656 patent at 30:43-47.

767. A POSITA would be enabled to implement this claim limitation.

13. "instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device"

768. Dr. Johnson alleges that the term "instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device" lacks enablement because it "attempts to monopolize an entire class of things defined by their function," and "for the reasons I provided in the subsections above of Section XIII.A.1. to XIII.A.10. and in Sections XIII.B. and XIII.C., above," which he "incorporate[s] those sections by reference fully herein." Johnson ¶2079. Dr. Johnson also alleges that a POSITA would not have understood how to practice the limitation without undue experimentation because the specification allegedly "fails to describe how the frame device instructs the server system to create the claimed interface."

Johnson ¶2079. Dr. Johnson does not meet his burden to show a lack of enablement. The Asserted Claims do not claim an "entire class of things defined by their function" solely with respect to this element, and Dr. Johnson does not attempt to identify what that supposed class would be. The claim must be read as a whole to identify whether the claim purports to cover any specific class of goods, systems, or services. Any supposed class covered by an individual claim must be defined by all elements of the claim in combination. In addition, Dr. Johnson does not identify any alleged experimentation that would be required for a POSITA to practice the patent, much less why any such alleged experimentation would be considered "undue" in the field of the inventions. And Dr. Johnson fails to identify any specific examples that fall within the claims but are not enabled.

769. This element is sufficiently enabled. The specification of the '656 Patent describes that prior systems and devices did not "display the image data according to a set of predetermined preferences," '656 patent at 3:47-50, that prior systems and devices "cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences," and "lack the ability to automatically distribute data . . . according to a set of preferences determined by the user." '656 patent at 4:9-15. To address these issues, the '656 Patent describes, for example, that "data about each user and the preferences associated with that user may be held in the data repository." '656 patent at 18:57-59. To obtain image data and preferences, the specification of the '656 Patent describes a user interface (a picture box viewer) that "is a web browser configured to display picture box 523 (e.g. a web page). … However, picture box viewer 500 may be any type of software program configured to display picture box 523," '656 patent at 22:1-8, that "[p]icture box 523 is any example of the type of interface that may be used to create and/or modify records in the data repository," and "[t]he information stored in the data repository may be presented to the user via picture box 523." '656 patent at 22:19-22. For instance,

a "when a user initializes a frame device, that frame device becomes associated with a picture box," "image data may be sent to the frame device by sending the data from a data source . . . to the picture mail address associated with that device" and this user interface "provides the user with an interface for managing the behavior characteristics of one or more registered frame devices." '656 patent at 21:9-39.

770. The '656 Patent further describes that "[w]hen the user initiates the frame device a picture box is created that allows the user to specify mange the behavior of the user's frame device." 7:28-30. Further, "[o]nce step 800 occurs, an embodiment of the invention proceeds to step 803," "[a]t step 803, the frame device initiates a connection to the data repository utilizing an interconnection fabric," "[i]f a record for the frame device is not located, step 807 executes and an image prompting the user to create a picture 20 box account associated with that frame device is displayed to the user," and "[o]nce the picture box account is created it provides the user with a way to set the behavioral characteristics of the frame device." '656 patent at 24:4-23. Additionally, "[t]he frame device may also automatically direct the system to generate a picture box if an attempt is made to connect and a picture box associated with the frame device attempting to make the connection does not exist" and "[t]his may occur without requiring any input from the user." '656 patent at 24:24-38.

771. Preferences are even further described in the '656 Patent. In "one or more embodiments of the invention, the data format of the submitted image is modified to conform to the preferences of the frame device," for example, if "the frame device . . . is capable of rendering JPEG images for display, the image will be converted from BMP format to JPEG format." '656 patent at 26:31-37. "Dimensional aspects" such as "resolution" can also be altered. '656 patent at 26:38-41. "Package data" provided to frame devices from the server can include "additional

parameters needed to direct the behavior characteristics of the frame device," such as "timing information" that can define "the time the frame device is scheduled to dim display 313" and/or "the time the frame device is scheduled to connect to the data repository for an update." '656 patent at 29:3-9, 11:27-31. A frame device that receives package data "loads the contents of the package into memory." '656 patent at 29:14-17.

772. Additionally, the originally-filed claims of the '573 Patent recited "obtaining image data from a data source," "an interface for specifying said behavior characteristics," and "input to said picture box modifies said behavior characteristics." The claims were later amended to recite "preferences" instead of "behavior characterizes," but the '573 Patent specification (shared with the '656 patent) clearly defines and enables both. The claims as filed in the original specification are part of the disclosure.

773. A POSITA would be enabled to implement this claim limitation.

XII. SUMMARY OF THE ALLEGED PRIOR ART

A. U.S. Patent No. 7,155,679 ("Bandaru")

774. Bandaru is titled "DIGITAL MEDIA FRAME" and is directed to "displaying images on a digital media frame." Bandaru at Abstract. Bandaru was filed on October 16, 2001, and was filed as a continuation application of U.S. Patent Application No. 09/405,523, filed September 23, 1999. U.S. Patent Application No. 09/405,523 (the "CIP Application") was a continuation-in-part of U.S. Application No. 09/195,355, filed on November 18, 1999 (the "Original Bandaru Parent").

775. As I explained in Section IX, it is my opinion that the inventors, Paul Yanover and Dean Schiller, conceived of the inventions disclosed in claims 2, 6, and 19 of the '573 Patent, claims 1-8 and 15 of the '930 Patent, and claims 1, 4, 11, 16-17, and 20 of the '562 Patent by at least September 16, 1999, and thereafter reasonably continuously and diligently worked to reduce

their inventions to practice until filing the application for the '573 Patent on December 10, 1999. As detailed below, it is also my opinion that the disclosure added in the continuation-in-part application (U.S. Patent Application No. 09/405,523), and that is also similarly disclosed in Bandaru, is not prior art to claims 2, 6, and 19 of the '573 Patent, claims 1-8 and 15 of the '930 Patent, and claims 1, 4, 11, 16-17, and 20 of the '562 Patent, because the continuation-in-part application was filed on September 23, 1999, after the date of conception of September 16, 1999.

776. The original Bandaru parent application was filed on November 18, 1998 as U.S. Patent Application No. 09/195,355. The Original Bandaru Parent included 6 Figures, which include the same content as Figures 1-6 of Bandaru. *Compare* Original Bandaru Parent Prosecution History at 33-38 *with* Bandaru at FIGS. 1-6. However, it was CIP Application filed on September 23, 1999, after the date of conception of claims 2, 6, and 19 of the '573 Patent, claims 1-8 and 15 of the '930 Patent, and claims 1, 4, 11, 16-17, and 20 of the '562 Patent, that added new Figures 7-13 and accompanying descriptions for those figures. *Compare* Original Bandaru Parent Prosecution History at 6-38 *with* Bandaru at FIGS. 7-13, 2:37-49, 9:50-13:52.

777. The Original Bandaru Application does not include much of the disclosure relied upon by Dr. Johnson to support his assertions that Bandaru discloses the elements of claims 2, 6, and 19 of the '573 Patent, claims 1-8 and 15 of the '930 Patent, and claims 1, 4, 11, 16-17, and 20 of the '562 Patent. This is especially true with respect to the elements of (i) a networked display device, (ii) a separable user interface to provide images to display devices, (iii) automatic image data requests, and (iv) periodic relay of image data.

778. The Original Bandaru Parent discloses a digital media frame (DMF) that "is capable of receiving image data from various external input devices, such as, digital cameras, video

cameras, computers, telephone lines, television cables, and Internet servers" and "[u]pon receipt of the image data, the DMF generates auxiliary information relating to each image and stores the image together with the auxiliary information in the memory," and "[t]he DMF, subsequently, fetches the image data from the memory with the auxiliary information and displays the images on a display." Original Bandaru Parent Prosecution History at 10.

779. With respect to receiving images from such "Internet servers," the Original Bandaru Parent only briefly describes, as shown in FIG. 1, an Internet Connector 116 that "is another external input device 100 that enables the DMF 102 to receive the image data directly from an Internet node" and that "the DMF 102 is configured to be able to read ("HyperText 1 0 Markup Language") HTML and to interface with Transmission Control Protocol ("TCP")/ Internet protocol ("IP")." Original Bandaru Parent Prosecution History at 12. For images stored on the DMF, the DMF can also store auxiliary information including an "Internet address" that "indicates which Internet node was used for sending the image data to the DMF 102." Original Bandaru Parent Prosecution History at 13. The Original Bandaru Parent describes that "the Internet address links to other websites that are related to the image" and "[f]or example, if an image describes a child, the linked websites describe child's family." Original Bandaru Parent Prosecution History at 13. This is the extent to which the Original Bandaru Parent describes the DMF as being an Internet-compatible device.

780. In the CIP Application filed on September 23, 1999, substantial new disclosure was added, including Figure 7 and its accompanying description related to a "network configuration" that includes a DMF, a DMF server, and a user profile database 724, Bandaru at 2:37-38, 10:6-11:8, as shown below.

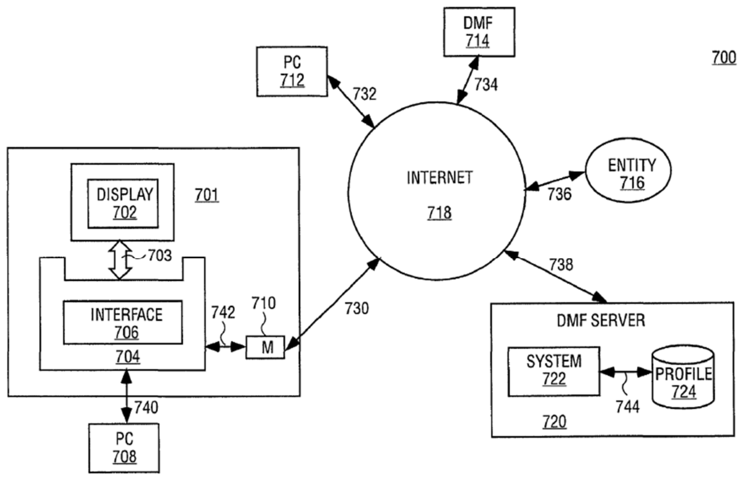


FIG. 7

781. The CIP Application also added FIG. 10 and accompanying description related to a "DMF Network Service," and FIG. 13 and accompanying description that relates to managing images using the DMF Network Service. See FIGS. 10 and 13 below.

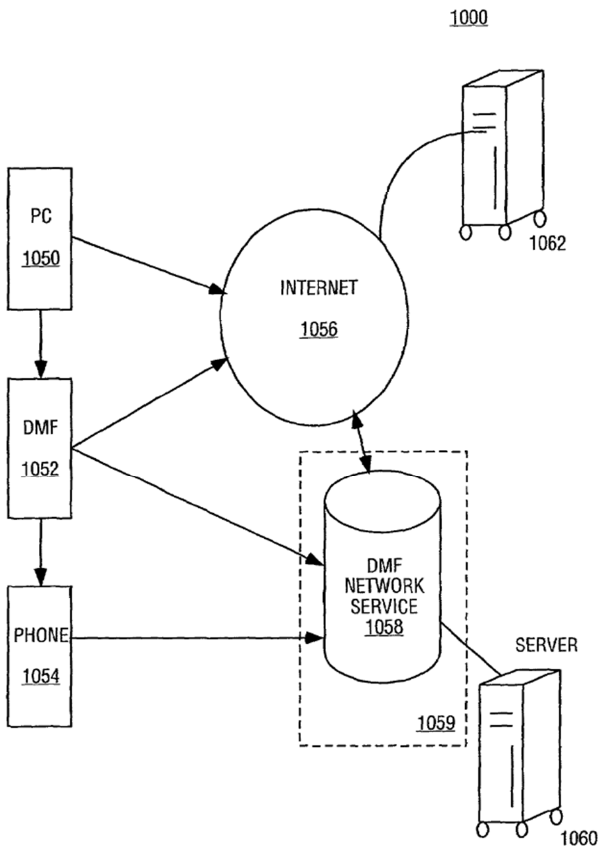


FIG. 10

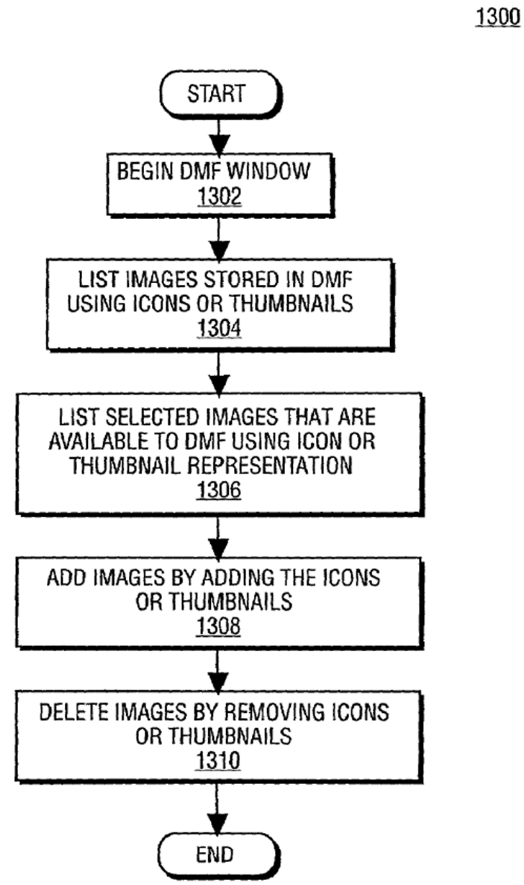


FIG. 13

782. This new disclosure in Bandaru describes that the DMF Network Service "supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052" and "communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:8-14. FIG. 13 relates to a process in which a DMF windows is used to manage images, such as being able to view image "thumbnails" and add or delete images from a DMF by "moving the corresponding icon or thumbnail" between a "first portion of [the] screen" associated with "DMF storage" and a "second portion of [the] screen" associated with "global storage." Bandaru at 13:28-52.

783. Dr. Johnson relies heavily on the new disclosure added to the CIP Application filed on September 23, 1999. For example, Dr. Johnson relies on the new disclosure concerning the DMF server, the user profile database, the DMF web page, etc., in his discussion of claim elements related to, for instance, user preferences, image display lists, a separable user interface to receive images from users and provide images to a server system, a server system, periodic and/or automatic connections to and/or transmission of image data to/from a server system in response to requests from display devices, associate records at a server system with a display device, transmitting metadata, etc. *See, e.g.*, Johnson ¶¶524, 531-560, 562-64, 566-78, 582-613, 709-16, 778-84, 817-23, 833, 870-72, 1005-13, 1016-20, 1053-54.

784. This disclosure relied on by Dr. Johnson was only introduced at the filing of the CIP Application on September 23, 1999, and therefore cannot be used as prior art for claims 2, 6, and 19 of the ’573 Patent, claims 1-8 and 15 of the ’930 Patent, and claims 1, 4, 11, 16-17, and 20 of the ’562 Patent, which all have a conception date at least as early as September 16, 1999. Therefore, in my opinion, none of the Bandaru combinations described in Dr. Johnson’s Opening Report with respect to claims 2, 6, and 19 of the ’573 Patent, claims 1-8 and 15 of the ’930 Patent, and claims 1, 4, 11, 16-17, and 20 of the ’562 Patent are sufficient to establish invalidity.

785. A general summary of the overall disclosure of Bandaru is also provided below, along with a discussion of what is missing.

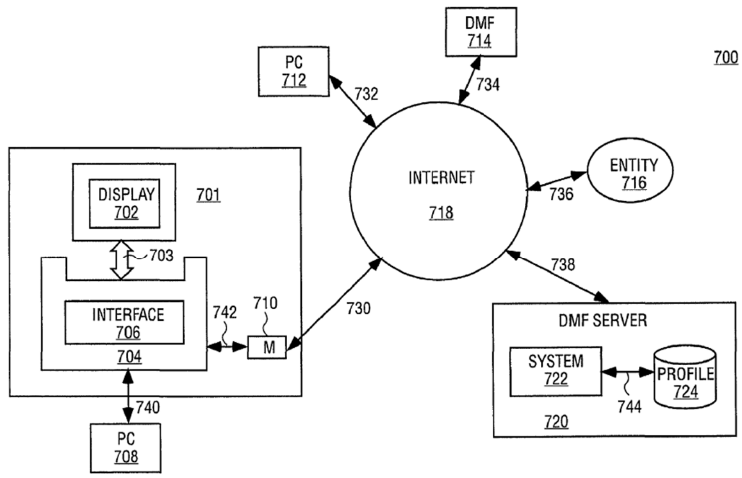


FIG. 7

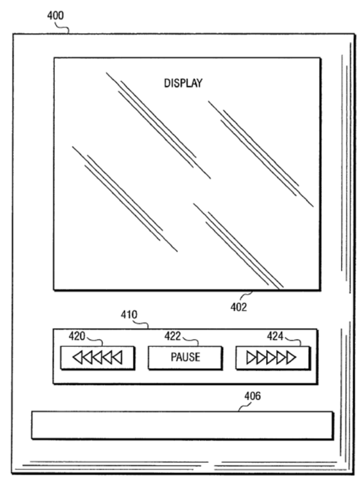


FIG. 4

786. In Bandaru, a Digital Media Frame ("DMF") server 720 includes a system 722 and a user profile database 724. DMF network service provides user and data services, which can be used to configure DMF. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. The web page can be accessed by PC 712, or a DMF. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF.

These commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selected the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF. Bandaru at 10:39-57.

787. Bandaru does not explain exactly how a DMF receives images associated with the DMF on the DMF web page. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other functionality of the two-way program is described. The claims of Bandaru only describe, after setting up images on the web page, that the images are "forwarded," "transmitted," or "provided to" the DMF.

788. Bandaru discloses using a "native DMF data format." Bandaru at 12:48-64. Bandaru claims to have multiple data formats in at least one embodiment: "[i]n one embodiment, the DMF has multiple native data formats and is also capable of recognizing multiple foreign data formats," Bandaru at 5:64-6, but Bandaru states that data these other formats must be translated to the digital media frame's native DMF data format to be used: "[c]onsequently, the foreign data format must be translated into a DMF native data format before the image data can be further processed." Bandaru at 8:17-19. The particulars of the native DMF format is not disclosed in Bandaru.

789. The native DMF format is not disclosed in Bandaru. A POSITA would recognize that this is an impediment to combining Bandaru with any other asserted prior art including Muoio, Hoyle, Jacklin, or Nishiyama. Given that Bandaru utilizes a "native DMF format" but it is not clear

what that format is, it is entirely possible that digital formats used by other inventions could be incompatible with Bandaru.

790. Bandaru is directed towards displaying images; however, it has a different approach than the Patents-in-Suit. One of the advantages of the Patents-in-Suit is that one does not need a computer. Conversely, while Bandaru asserts that "it is desirable to have an inexpensive digital media frame that is capable of obtaining images with or without a PC," Bandaru at 1:54-57, Bandaru discusses the advantages of using a computer with the DMF, particularly for retrieving and converting images from a digital camera Bandaru at 3:35-41.

791. In Bandaru, the DMF has an interface unit that connects to external input devices such as "digital and video cameras, scanners, computers." Bandaru at 3:54-58, 4:1-4. The Patents-in-Suit have no external inputs from devices. This is yet another clear difference between Bandaru and the Patents-in-Suit.

792. Bandaru does not disclose any means of updating the software either automatically or manually. A POSITA would recognize this as a substantial difference between Bandaru and the Patents-in-Suit.

793. Even if Bandaru was available as "prior art," a POSITA would recognize the numerous and substantial differences between Bandaru and the Patents-in-Suit. Furthermore, a POSITA would recognize that combining Bandaru with several of the other asserted prior art systems would be problematic with no guarantee of success.

B. U.S. Patent No. 6,670,934 ("Muoio")

794. Muoio is titled "METHOD AND SYSTEM FOR DISTRIBUTING ART," and is directed to "an art distribution system for distributing art to multiple display devices within an environment." Muoio at Abstract. In the abstract, Muoio further states:

> The art distribution system provides a hierarchical representation of spaces within the environment. Each space may be further subdivided into subspaces. The art distribution system allows a user to select a space within the hierarchy and then to select an image that is to be displayed at the display devices within the selected space.

Muoio at Abstract.

795. Muoio is thus directed towards distributing images to multiple locations in a building. As one example of this, Muoio states:

> For example, if the environment is a large house, then the spaces may be the east wing and west wing of the house, the subspaces of the east wing may be the bedrooms and the kitchen, and the subspaces of the bedrooms may be the master bedroom, the guest bedroom, and so on. Each Space within the hierarchy may have one or more display devices within it. For example, the master bedroom may have several display devices that are capable of displaying art images.

Muoio at 3:43-52.

796. A POSITA would therefore understand that the "art distribution system" that distributes the art images to the individual display devices in the rooms is not a remote server system but is implemented by software running on a local computer system within the home itself.

797. In Muoio, a display device 100, which a POSITA would understand is a simple (though potentially large) computer monitor, "displays the images of a play list under control of the art distribution system," as shown in FIG. 1, below. Muoio at 4:42-60. The play list to be played in a room is selected using conventional user input devices connected to the computer system running the art distribution system software, which may be located throughout the house. Muoio at 4:42-60.

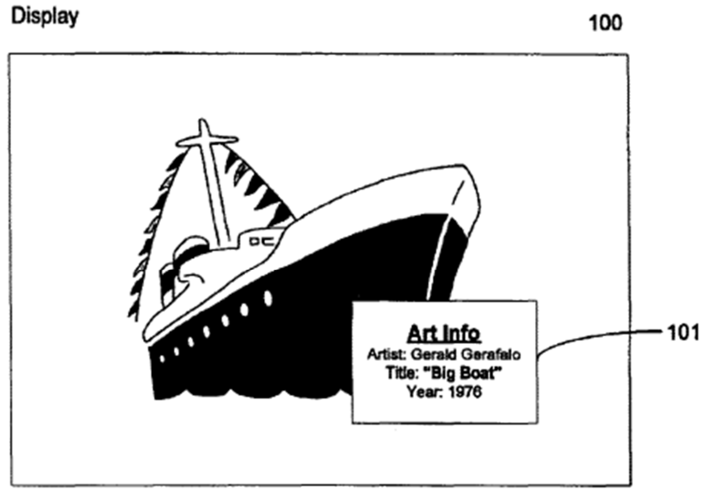


Figure 1

798. The art distribution system consists of a collection of software components running on a distributed local computer system. Muoio at 6:7-10; 10:42-44.[72] These software components include, for example, a local art server software component 601 "connected to the art space controllers [other software components running on the same distributed computer system] via communications channel 607 which may be a logical channel when various components execute on the same computer system." Muoio at 6:6-20. The local art server software component "communicates via communications channel 608 (e.g., the Internet)" to a remote art mass storage device that "includes images and image information for accessible images." Muoio at 6:20-23. The local art server software component downloads images from the remote art mass storage device using another local software component called the "art mass storage interface 708." Muoio at 6:30-39. The local art server software component downloads images as bitmaps from the remote

[72] For implementation details, Muoio incorporates by reference several co-pending U.S. patent applications, including U.S. Patent Application Ser. No. 09/322,852, entitled "METHOD AND SYSTEM FOR MANAGING SOFTWARE COMPONENTS," Muoio at 1:6-32, which Muoio expressly refers to at 10:42-44: "An art distribution system may be implemented using the techniques and facilities described in U.S. Patent Applications entitled 'Method and System for Tracking Software Components.'"

art mass storage device and stores them locally in "a database of the bitmaps for the images that are currently specified in a play list." Muoio at 6:23-25. The local art mass storage interface software component also periodically submits queries submitted by a user using one of the local user interface devices to the remote art mass storage device "to determine if any new images are accessible that satisfy the queries." Muoio at 6:65-7:1.

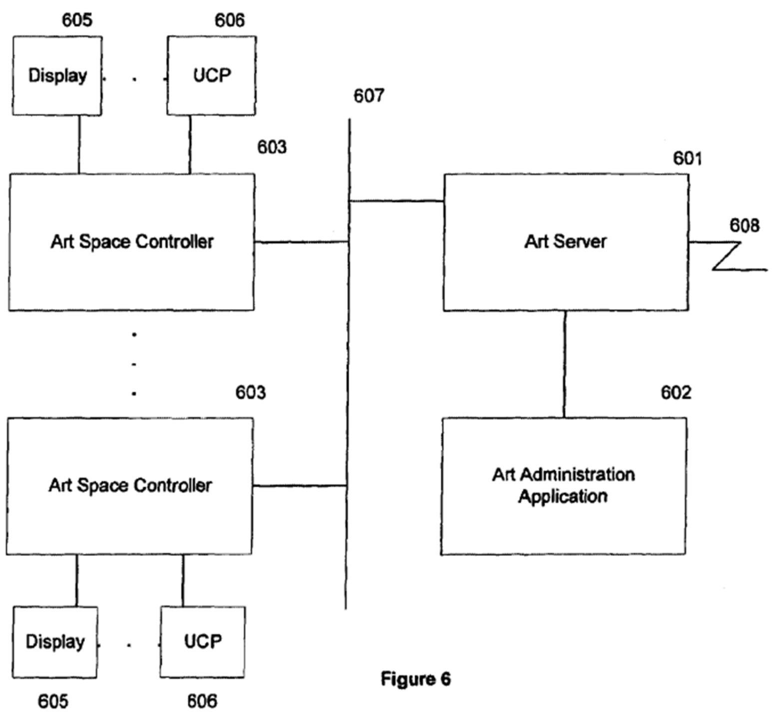


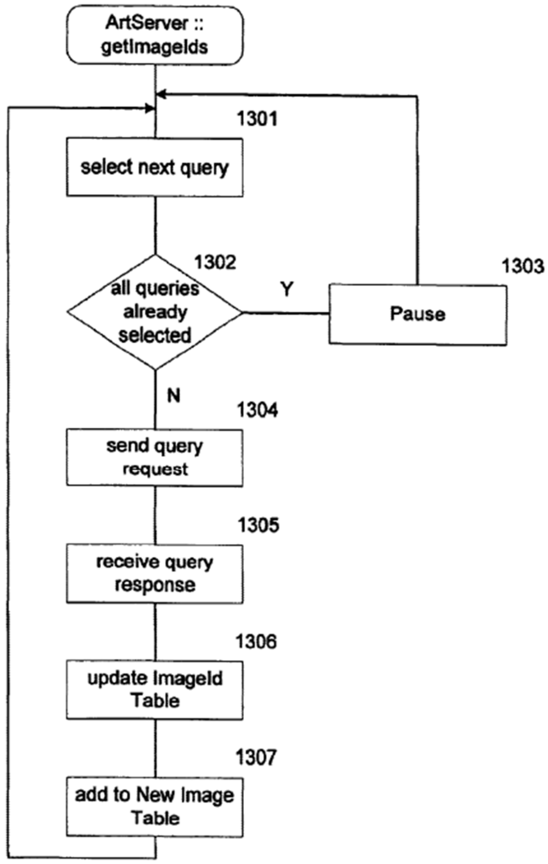
Figure 6

799. FIG. 13 is related to requesting images from the mass storage device:

FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over the Internet and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry

> to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query.

Muoio at 8:54-9:7.



Figur 13

800. FIG. 14 specifies that, after performing the process of FIG. 13 to obtain image identifiers in response to a user query, images associated with the image identifiers are individually retrieved:

> FIG. 14 is a flow diagram of the get images function of the art server. The get images function is part of the art mass storage interface. This function processes the image identifiers that have been stored in the new image table and retrieves the corresponding image. In step 1401, the function retrieves the next image identifier, if any, from the new image table. In step 1402, if all the image identifiers have already been selected, then the function loops to step 1401, else the function continues at step 1403. In step 1403, if the image for the selected image identifier is already in the image database, then the function continues at step 1407, else the function continues at step 1404. In step 1404, the function requests the image from

> the mass storage device. In step 1405, the function receives the image. In step 1406, the function stores the image in the image database. In step 1407, the function removes the selected image identifier from the new image table and loops to step 1401 to select the next image.

Muoio at 9:8-25.

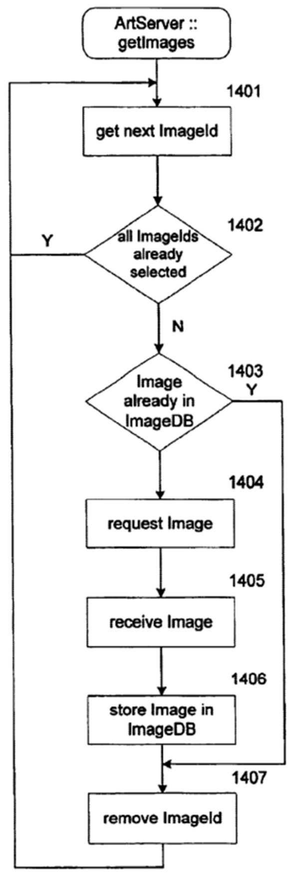


Figure 14

801. Muoio describes the user interfaces of its local user input devices as follows: "[t]he art distribution System provides a user interface at a user control point device to which a user can specify the play list for a certain space." Muoio at 2:55-59. The user control point device is described as "[e]ach space may have a user control point devices, such as a touch panel display, within it." Muoio 4:6-7. Figure 2 of Muoio shows a user control panel, and Figure 3 shows the user interface.

802. A POSITA would readily notice many substantial differences between Muoio and the Patents-in-Suit. Muoio makes no mention of automatically updating software. In fact, updates of any kind are only mentioned twice, and they have nothing to do with software. The update of the image identifier table, Muoio at 9:1-4, and updating the art management user interface to reflect the old playlist, Muoio at 8:36-39. Muoio also does not mention ease of use and operation with minimal user input, an emphasized benefit of the Patents-in-Suit. Nothing in Muoio discloses that the display device of Muoio has a memory inside of the integrated housing, security information comprising authentication information, onboard software (or a current version of onboard software), or communication circuitry. In fact, Muoio is quite clear that its display device is simply a standard device, and any processing is done in the art space controller.

803. User interfaces are discussed in Muoio in reference to a user control point device: "The art distribution System provides a user interface at a user control point device to which a user can specify the play list for a certain space." Muoio at 2:55-59. The user control point device is described as "Each Space may have a user control point devices, such as a touch panel display, within it." Muoio at 4:6-7. Figure 2 of Muoio shows a user control panel, and Figure 3 shows the user interface. However, the specification contains no details regarding the structure of this device.

804. In Muoio, the display device is not a "smart" device, but rather is a standard display controlled by other devices. While the term 'display device' is used throughout Muoio, there is no disclosure that the display device has a CPU, RAM, updates software, or includes functionality other than image display. For example, "The display device 100 displays the images of a play list under control of the art distribution system." Muoio at 5:44-46.

805. Figure 6 of Muoio further clarifies the relationship between the display devices and the art space controller software running on the local computer system:

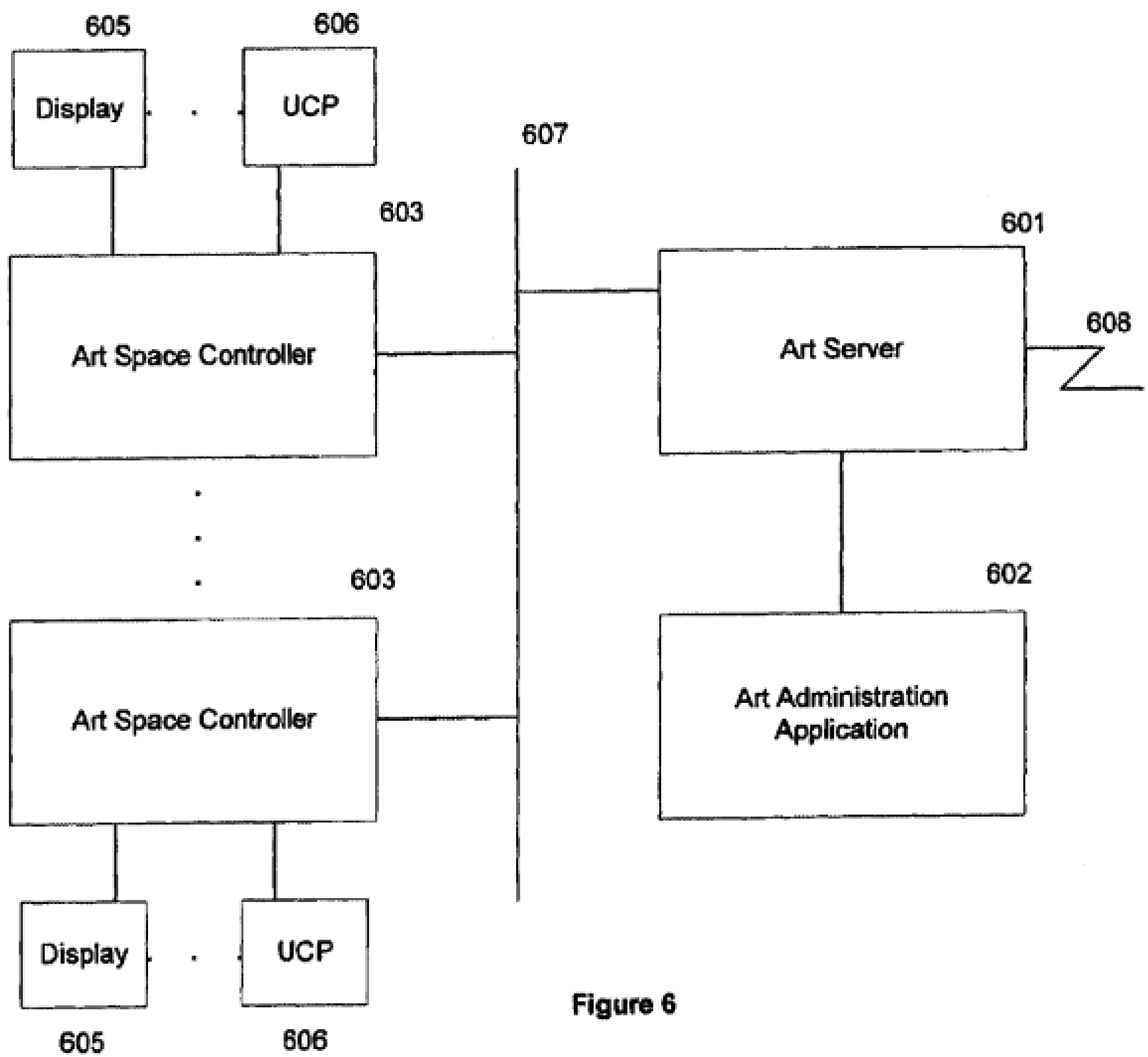


Figure 6

806. A POSITA would readily recognize that what Muoio is describing is a display is simply a monitor that does not do any processing itself.

807. A POSITA would also recognize that there is no motivation to combine Muoio and Bandaru, as no improvement to either would be achieved by said combination, nor would it be technically or economically feasible.

808. Furthermore, a POSITA would recognize that there is no motivation to combine Muoio and the Stylistic Tablet. Muoio already has displays and would not be improved by the Stylistic Tablet, which has a tiny, low-resolution display that is not appropriate for displaying works of art. The Stylistic Tablet is not directed towards displaying art, and would not be improved by Muoio.

809. Furthermore, a POSITA would recognize that there is no motivation to combine Muoio with Jacklin. Neither technology would be improved. Muoio is directed to displaying digital artwork at a location such as a museum or home. Jacklin displays image data from non-volatile storage, like the Fujitsu Stylistic, on a small, low-resolution display not appropriate for displaying works of art. Both already have network connections and the ability to display an image.

810. Furthermore, a POSITA would recognize that there is no motivation to combine Muoio with SSL, TLS, or Elgamal. Muoio is a system for displaying digital artwork from a local database maintained by a local art server, while SSL and TLS are protocols for security network traffic over a wide area or public network. Elgamal is a protocol for exchanging a cryptographic key. Muoio is not in the same field as SSL, TLS, or Elgamal. Furthermore, there is no improvement to any of these by combining with one or more of the other.

C. U.S. Patent No. 6,396,472 ("Jacklin")

811. Jacklin is entitled "DEVICE AND PROCESS FOR DISPLAYING IMAGES AND SOUNDS" and is directed to "an electronic apparatus displaying of images and accompanying audio recordings stored on a removable flash memory, or similar non-volatile storage media." Jacklin at Claim 3:24-27.

812. Jacklin describes the electronic apparatus as a "free standing unit" for "the displaying of digital still photographs and accompanying audio recordings." Jacklin at 1:5-12. Pictures are stored internally on flash memory. Jacklin at 11:3-12.

813. Although Jacklin mentions the internet in discussing how digital cameras can provide digital images to personal computers for "adding such images to 'home pages' on the internet or to send them via electronic mail," Jacklin at 2:62-65, Jacklin does not disclose that the disclosed device has the capability to connect to remote server systems over a wide area network such as the internet and send requests for image data and software updates to such a remote server system. Instead, Jacklin's device includes a network controller 119 that only "provides connectivity to the local area network" to "provide means for bringing photographs stored on such a local area network into the operational sequence of the present invention." Jacklin at 11:34-46, 8:16-33.

814. A main focus of Jacklin is the physical layout and structure of the housing for the device. Thus 6 of the 7 drawing figures (FIGS. 1-6) and much of the detailed discussion of Jacklin are directed at the housing of the device and how it can be supported on a surface or hung on a wall.

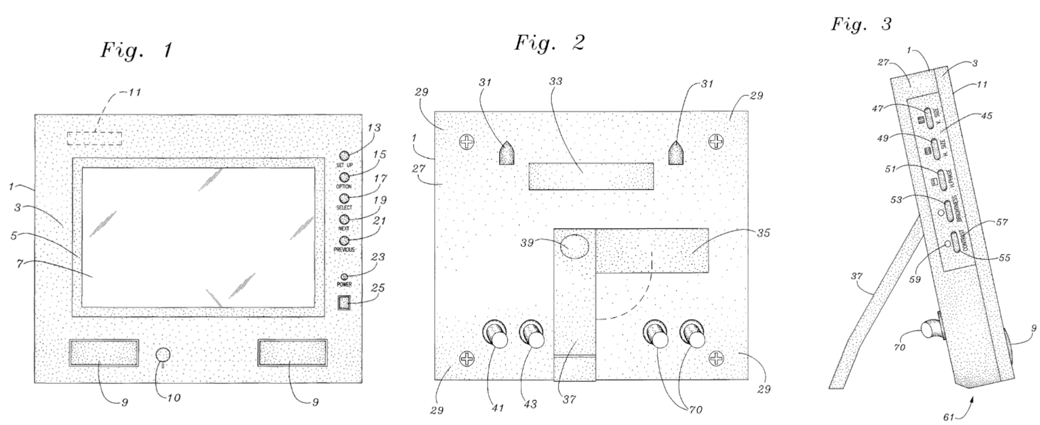


Fig. 4

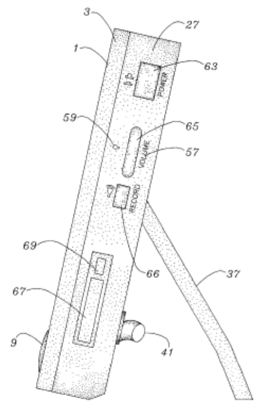


Fig. 5

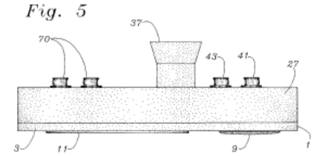
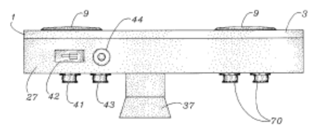
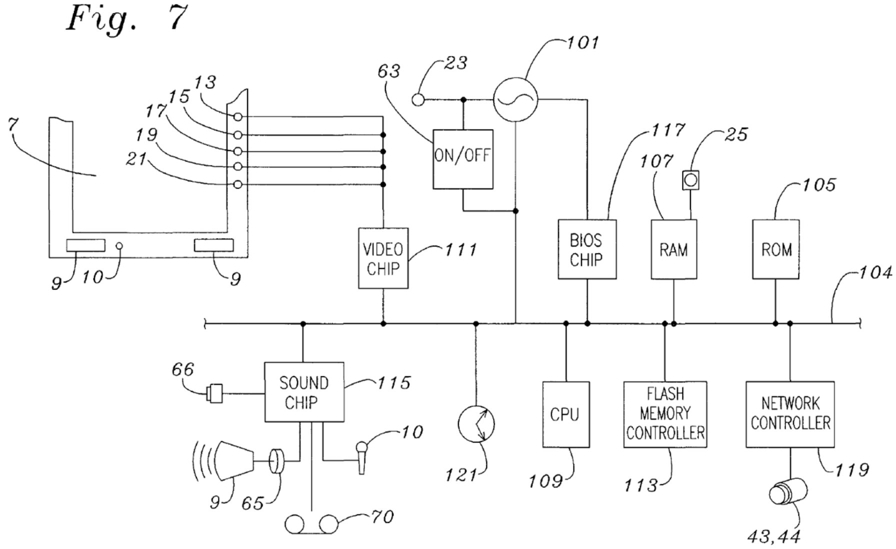


Fig. 6



815. Although Jacklin includes a schematic diagram with generic computer components and states that the device includes operational software stored in a ROM, Jacklin does not disclose any operational details. Instead Jacklin asserts that "Those having a modicum of skill in the art, readily understand the operating software, 123 which includes a set of computer instructions stored on ROM 105, which when executed by the CPU 109, modify the behavior of the instructions being executed and the behavior of the apparatus of the present invention." Jacklin at 11:53-58.

Fig. 7



816. A POSITA would recognize many differences between Jacklin and the Patents-in-Suit. Jacklin is focused on a device for displaying image data stored on various formats of digital camera storage media, and on how to support or mount a device on a surface or wall, neither of which is a focus of the Patents-in-Suit.

817. A POSITA would also recognize that no remote server system is mentioned anywhere in Jacklin to which requests are sent for digital images. Rather, Jacklin discloses using a small digital recording media inserted into the device to load images, Jacklin at 3:37-47, and obtaining local image data (in an unspecified manner) from other devices on a local area network. This is contrary to the Patents-in-Suit which all claim devices that are configured to request image data from a remote server system that is communicated with over a wide area network such as the internet.

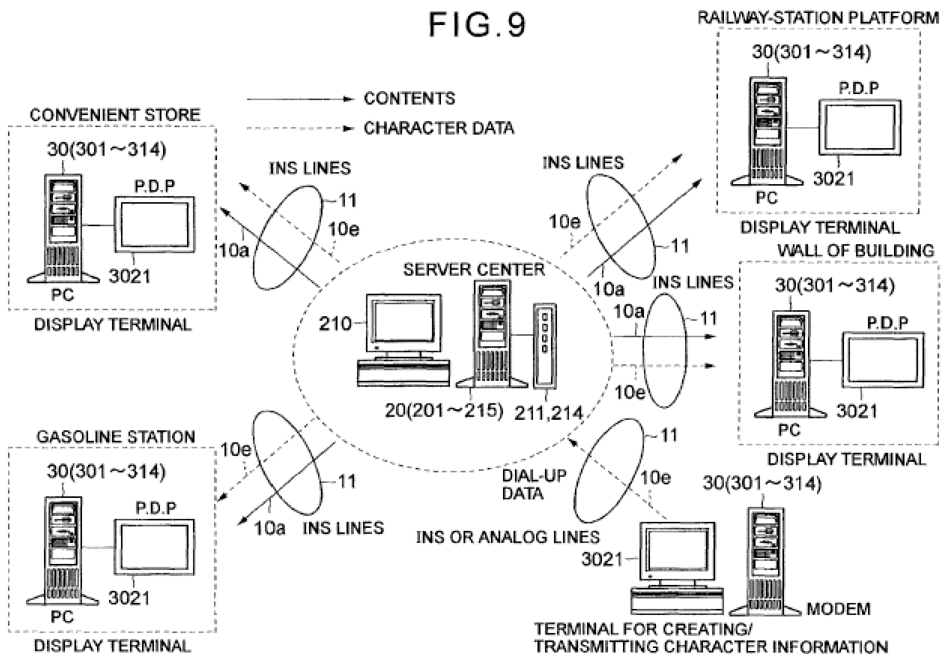
818. While Jacklin does mention software stored in ROM, it makes no mention of automatically updating that software by requesting and obtaining a software update from a remote server system via a network. Instead, the only way disclosed by Jacklin to modify the software of the device is with "additional or external ROM." Jacklin at 12:11-14. A POSITA would recognize this as yet another difference between Jacklin and the Patents-in-Suit.

D. U.S. Patent No. 6,725,460 ("Nishiyama")

819. Nishiyama is titled "MULTI-MEDIA DATA AUTOMATIC DELIVERY SYSTEM" and is directed to a content delivery system in which a central server system distributes video content (e.g. advertisements) over existing telephone (ISDN) lines to personal computers ("PC's") located at commercial locations such as railway stations, convenience stores and gas

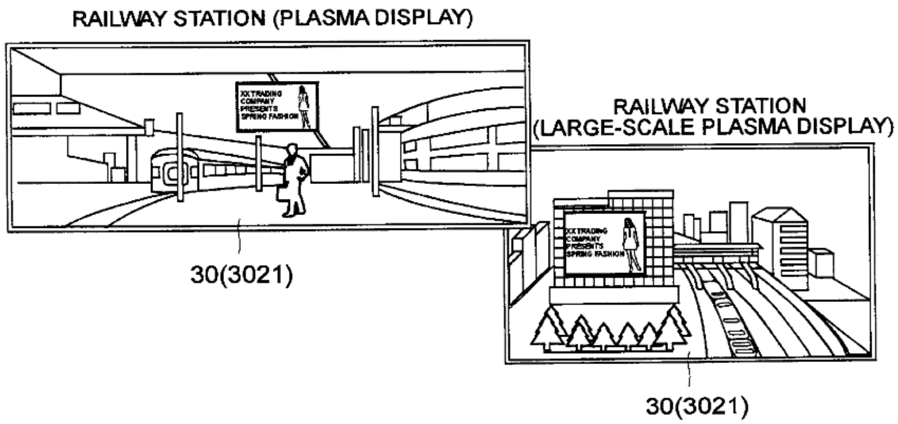
stations for display on large plasma display panels ("P.D.P") or large "aurora vision" display screens[73] connected to the PC's. *E.g.*, Nishiyama at 11:38-12:14.

FIG.9



[73] "Aurora vision" is the name used in Japan for large "Diamond Vision" display screens that were used at the time of Nishiyama at places like outdoor stadiums. *See, e.g.*, https://en.wikipedia.org/wiki/Diamond_Vision.

FIG.5



820. The focus of Nishiyama is on reducing telephone usage charges by scheduling the sending of large video files by the central system to the terminal systems over the existing telephone lines at night when usage charges are less than during the day. Nishiyama calls this a "light-load-time-period-remote-casting function:"

> In this manner, the system described above is provided with a light-load-time-period-remote-casting function which delivers contents during time period such as a nighttime when terminal systems are idling, the purpose being not to require the terminal systems to have a high-performance capacity and not to require the communication network to have a high-speed-data-transfer capacity so as to avoid a cost increase associated with enhancement of the terminal systems and to avoid an increase in a communication-line-usage fee caused by use of a high-speed-data-transfer network even when moving-picture information or high definition images having a large amount of multi-media data in the range of several hundreds mega-bytes is delivered from the center system to a plurality of terminal systems with an aim of delivering commercials on sales goods, notices from a local community, traffic information, a local weather forecast, or the like.

Nishiyama at 4:42:58.

821. To send content to a terminal system using the "light-load-time-period-remote-casting function," the server center dials the telephone number of the terminal system at a low usage rate time (e.g., at night) and transmits the content to the terminal system over existing telephone lines, *see, e.g.*, Nishiyama at 15:59-63; Nishiyama FIG. 12.

822. In the system of Nishiyama, the terminal systems do not initiate communications with the server center to request content from the server center. Instead, delivery of content to the terminal systems in the system of Nishiyama is totally controlled by the server center, which selects the content to be sent to a terminal system, selects the time for content to be sent to a terminal system, and initates communication with a terminal system by dialing the terminal system's telephone number. *See, e.g.*, Nishiyama at 11:23-39.

823. In the system of Nishiyama, instead of communicating with a terminal system using a computer data communications network, the server center of Nishiyama creates a direct telephone line connection with a terminal system by dialing the terminal system's telephone number and sends data directly to the terminal system over that direct telephone line connection. *See, e.g.*, Nishiyama at 12:64-13:6.

824. The terminal systems of Nishiyama initiate communications with the central server only for three reasons: to send log information to the central server, Nishiyama at 35:39-40, to send still image snapshots of their display screens to the central server (to verify to the central server that the advertisements or other content are in fact displayed), Nishiyama at 23:2-10, or to send emergency character information to the central server. Nishiyama at 28:1-7.

825. In the system of Nishiyama, the terminal systems do not request software updates from the central server. Instead, updating software of terminals is initiated and controlled by the central server:

> 1-3-5. Remote Maintenance of Software of Terminal System 30 1. Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20.
>
> Note: when commercially-available remote-access software is used, terminal systems 30 for installing software can be specified.

Nishiyama at 36:4-11.

826. A POSITA would immediately recognize that the system of Nishiyama is the exact opposite of the claimed inventions of the Patents-in-Suit. In Nishiyama, the displays are simple (though large) computer monitors attached to PC's, not intelligent digital picture frames as in the present invention. In Nishiyama, the terminal systems do not initiate communications with the central server to request content; instead, the central server initiates communications with the terminal systems. In Nishiyama, the terminal systems do not authenticate the central server; instead, the central server authenticates the terminal systems. In Nishiyama the terminal systems do not request software updates from the central server; instead, the central server initiates the sending of software updates to the terminal systems. Finally, in Nishiyama, the central server and terminal systems do not communicate via computer data communications networks, but via direct point-to-point telephone line connections.

827. It should also be noted that the USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[74] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. A review of undergraduate computer science courses offered at Rice

[74] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

University,[75] where Dr. Johnson is a professor, shows not even a single course in Interactive Video Systems, or any video system at all. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Nishiyama.

828. Using Dr. Johnson's own definition of a POSITA, it is clear that such a POSITA would not be capable of combining Nishiyama with any other art.

E. U.S. Patent No. 6,771,290 ("Hoyle")

829. Hoyle is titled COMPUTER INTERFACE METHOD AND APPARATUS WITH PORTABLE NETWORK ORGANIZATION SYSTEM AND TARGETED ADVERTISING" and is directed to "providing an automatically upgradable software application includ[ing] targeted advertising based upon demographics and user interaction with the computer." Hoyle at Abstract. Hoyle's main purpose is to provide banner ads in web browsers. See FIGS. 1, 5, and 5a.

75 https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

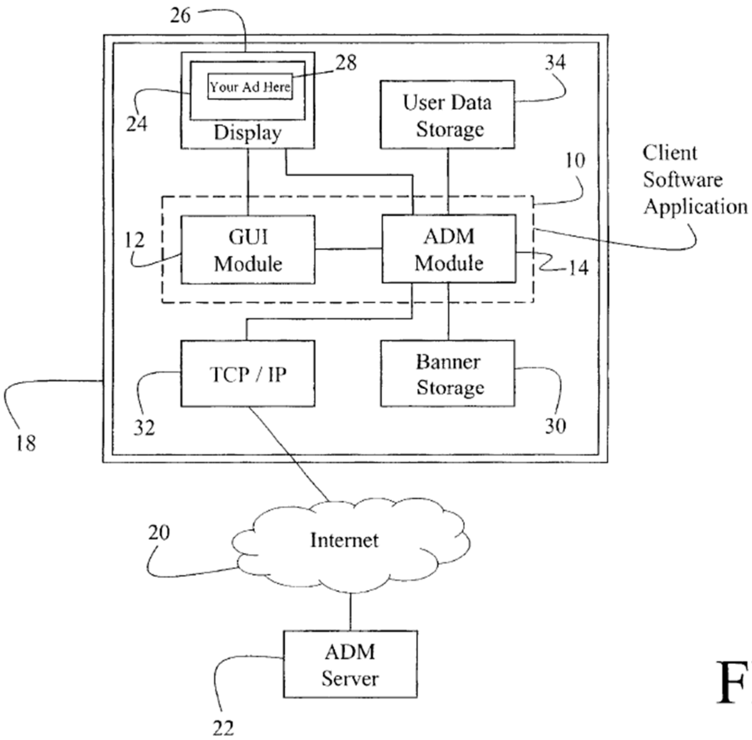


FIG. 1

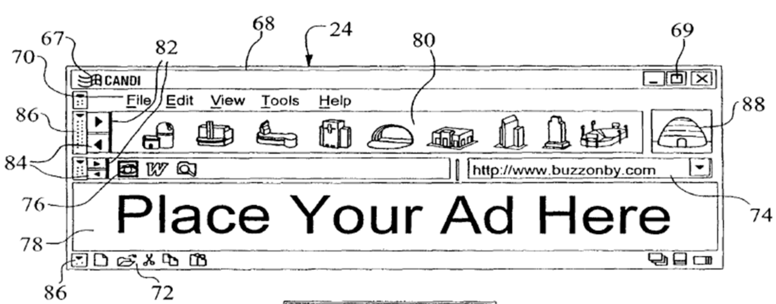


FIG. 5

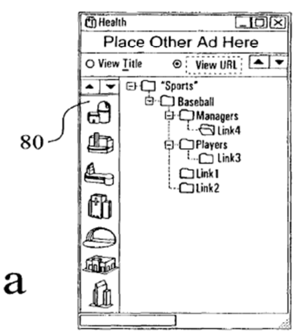


FIG. 5a

830. As shown in FIGS. 1, 5, and 5a, an application window 24 includes a banner advertising region 28 (78). Hoyle at 10:35-55. As shown above, Hoyle includes non-volatile data storage with a first and second program modules. The first program module displays a graphical

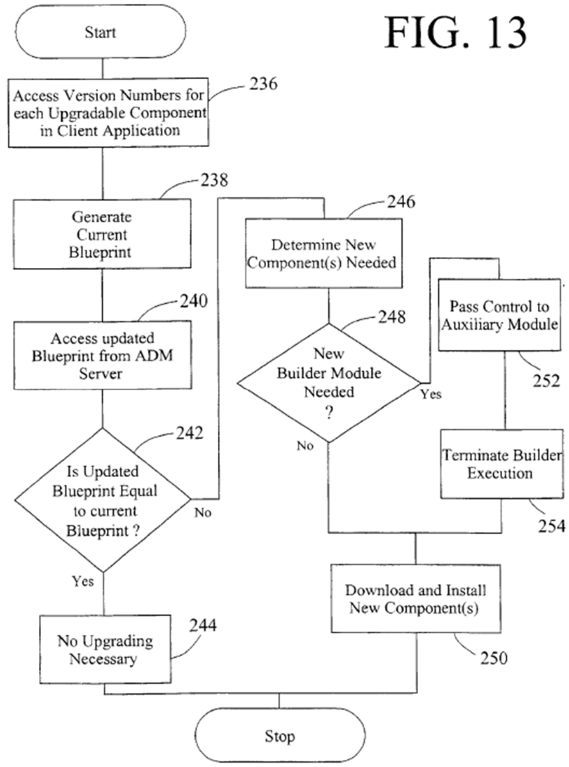
user interface that is separated into regions. These regions can display different data sets such as financial, sports, etc. Hoyle at 5:10-21. The second program module is responsible for providing the advertisements. Hoyle at 5:32-42. Advertisements "displayed in banner region 28 are display objects such as graphical images that are stored on the computer's hard drive or in other non-volatile memory as a filed or multiple files which are collectively represented in FIG. 1 as banner storage 30." Hoyle at 10:40-45. The advertisements are accessed by an ADM module 14 "as needed . . . and displayed in banner region 28." Hoyle at 10:45-46. When ADM module 14 "determin[es] that new advertising is needed, it accesses the Internet via an existing TCP/IP connection 32 and downloads new banners from ADM server 22." Hoyle at 10:46-49. "Computer usage information" can also be transmitted to the ADM server 22 to be used in "targeting future advertising to the end user." Hoyle at 10:49-55.

831. New ADM modules can also be downloaded by GUI module 12. Hoyle at 11:30-35. Banner advertisements "are stored as graphical images on the client computer's hard drive and are replaced once they have been displayed a certain number of times," and the client computer obtains ads "by downloading new banner advertisements from ADM server 22." Hoyle 22:24-31.

832. The client computer also stores a banner database 130 "along with the image files themselves." The database 130 "contains information that is used by timer/display component 110 to determine when the banner should be displayed." The data for each banner includes "the filename of the image file, a destination link, one or more associated category identifiers, one or more associated trigger links, one or more associated programs, and a priority level." The destination link is "the URL of the website to which the default browser will be directed if the user clicks on the banner while it is displayed." Hoyle 22:36-51.

833. FIG. 13 illustrates a "builder routine 190." Hoyle at 29:66-67.

FIG. 13



834. As shown above, a builder module checks access version numbers and generates a "current blueprint." An updated blueprint is accessed from the ADM server 22 and, if versions are different, the builder module determines which components need upgrading and downloads and installs the upgrades. Hoyle at 30:3-18.

835. Hoyle is thus directed towards providing advertisement over the internet. Hoyle at 1:13-17.

836. A POSITA would notice that Hoyle includes a standard computer monitor, Hoyle at 10:21-26, that does not meet any of the limitations of the frame device in the Patents-in-Suit. This is made even clearer by referring to figures 5 and 5a already shown.

837. A POSITA would also note that while updating software is discussed in Hoyle, Hoyle at 6:7-15, the updating is done by the program modules that are on the nonvolatile storage. The updating is not done by the monitor or any analog to the frame device of the Patents-in-Suit.

838. A POSITA would further notice that Hoyle's primary USPTO classification is 345/745. Classification 345 is computer graphics processing and selective visual display systems: a substantially different field than Nishiyama, Bandaru, Criss, and many of the other prior art publications cited.

F. U.S. Patent No. 6,308,061 ("Criss")

839. Criss is titled "WIRELESS SOFTWARE UPGRADES WITH VERSION CONTROL," and is directed to updating mobile devices in a wireless telecommunications system.

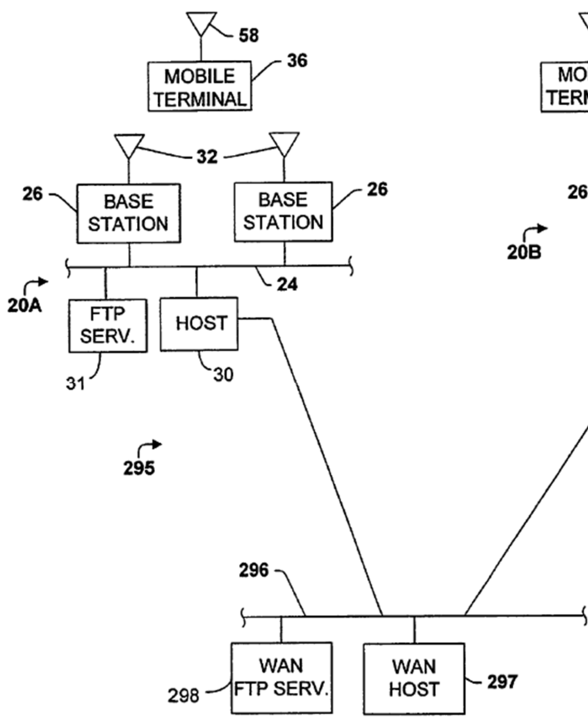


Fig. 12

840. Criss explains that the host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile

terminal 36 has logged on." The host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

841. Criss is thus directed towards a wireless communication system. Nothing in Criss is analogous to the Patents-in-Suit. Criss describes the technical field of the invention as "The present invention relates generally to wireless software upgrades in wireless communication systems. More particularly, the present invention relates to a system and method in which software upgrades are provided wirelessly to mobile devices upon detecting that software currently in the mobile devices is outdated." Criss at 1:20-25. Note that Criss describes the invention as being related to mobile devices. A POSITA would recognize that Criss is in an entirely different field than the Patents-in-Suit.

842. A POSITA would also note that Criss does not disclose automatic updates. In fact, the word "automatic," or any derivative thereof, appears only once in Criss: "Additional features of both the data keeper 510 and the time keeper 525, such as automatically adjusting for daylight savings times and/or leap year variations, is also preferably programmed into the processor 40 in accordance with known techniques in the art." Criss at 24:18-22. And this only occurs if it is "programmed into the processor 40."

843. Furthermore, Criss explicitly states that the user must be involved in the scheduling of software updates: "Entries in the software update schedule table may be made manually through a keypad or other user input associate with the at least one mobile device or wirelessly through communications received from the host computer." Criss at 3:7-11. This is further stated in claim 7

of Criss: "The method of claim 1, wherein at least one entry is manually entered in the software update schedule table through a user input device coupled to the at least one mobile device."

844. In fact, throughout Criss are operations that must be performed manually. "The new identifier Stored in the package definition files as discussed below is manually entered into the host computer 30 by a system administrator or the like, for example." Criss at 10:16-19.

845. A POSITA would recognize that Criss is not in the same field as the Patents-in-Suit. Furthermore, a POSITA would realize that Criss does not teach any of the key elements of the Patents-in-Suit, and in fact teaches away from the automatic software update of the Patents-in-Suit.

846. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in telecommunications, the primary field of Criss. Nor does Dr. Johnson's description of a POSITA indicate any skill in mobile devices, which are mentioned 129 times in Criss. It is more likely than not that a POSITA as described by Dr. Johnson would not be able to combine Criss with anything.

847. Criss also requires an extensive infrastructure: "When a mobile terminal 36 within the system initially powers up (via an on/off switch for example) or is reset, the mobile terminal 36 goes through an initialization, or boot-up routine. Such routine includes communicating with

the host computer 30 via a selected base station 26 in order that the host computer 30 provides the mobile terminal 36 with its internet protocol (IP) address as is conventional." Criss at 7:22-28.

848. Base stations are integral to Criss' functionality. This is shown throughout Criss, including in figure 1 shown here:

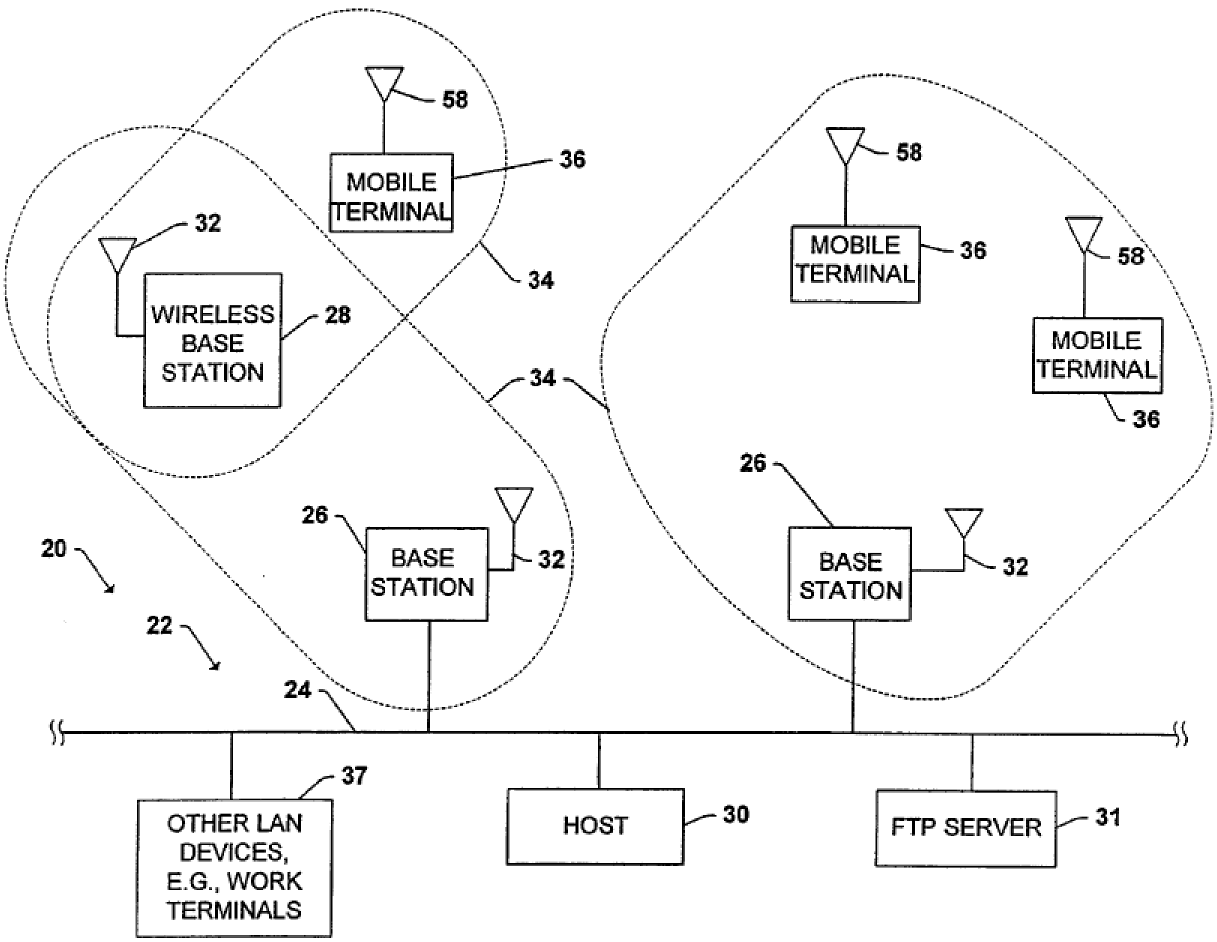


Fig. 1

849. Criss can only communicate due to this extensive infrastructure. A POSITA would recognize that this requires the base stations.

G. U.S. Patent No. 6,161,133 ("Kikinis")

850. Kikinis is titled "METHOD AND APPARATUS FOR CONFIGURATION OF AN INTERNET APPLIANCE" and describes that "[t]he present invention is in the field of Internet-capable appliances and pertains more particularly to methods and apparatus for configuring such appliances for Internet Access and use by dial-up connection to a configuration server." Kikinis at 1:6-10. Kikinis was concerned with addressing issues with internet appliances (such as IP phones) requiring "tedious set-up operations." Kikinis at 2:45-60.

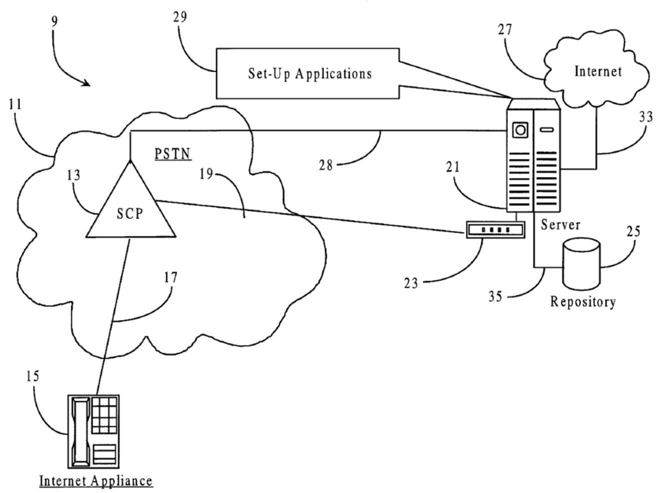


Fig. 1

851. Kikinis describes initial configuration of a device that has connected to the internet. This concept permeates Kikinis, but one example is: "[u]pon receiving a request from an Internet appliance via the network connection the control routines consult the database for correct procedure, and interact with the appliance via the network connection to configure the appliance for Internet access and operation." Kikinis at 3:22-26. As a specific example, Kikinis discloses an automated first time setup routine in which a user is given a 1-800 telephone number and dials the telephone number using the device 15 to dial up server 21. The server 21 then looks up configuration information for the type of device associated with the particular 1-800 telephone number dialed and user/location information associated with the phone number of the user.

Kikinis at 4:64-6:52. This information can include protocol information, network drivers, etc. Kikinis at 8:41-45.

852. Kikinis also discloses "offering of new software to existing, already set up users, by letting their appliances receive such indication, or in case of non-info appliances, letting the user know by other means, such as e-mail, fax, mail etc., or by having the appliance look up and possibly connect to the server in certain, periodic, pre-programmed or flexible intervals." Kikinis at 6:25-37.

853. A POSITA would first notice that the word "image" does not even appear in Kikinis. Neither do synonyms such as a photo, or a picture. As such, Kikinis cannot disclose a system for distributing image data. Furthermore, Kikinis cannot disclose being configured to obtain image data and said preferences from said user. Furthermore, Kikinis cannot disclose providing said image data and preferences to said at least one server system. Furthermore, Kikinis cannot disclose at least one server system that is configured to periodically relay said image data and said preferences to at least one frame device. Furthermore, Kikinis cannot disclose issuing a request for said image data.

854. A POSITA would also recognize that Kikinis does not disclose any frame device, nor any analog thereof. Kikinis does make passing mention of web phones, Kikinis at 2:8-13, and video phones. Kikinis at 2:15-17. However, neither of these constitute a frame device comprising a border region modeled to resemble a picture. Furthermore, neither the web nor video phone disclose a frame device that has a user interface that is physically separable.

855. Kikinis describes the initial configuration of a device that is connected to the internet. This concept permeates Kikinis, but one example is: "Upon receiving a request from an Internet appliance via the network connection the control routines consult the database for correct

procedure, and interact with the appliance via the network connection to configure the appliance for Internet access and operation." Kikinis at 3:22-26.

856. A POSITA would recognize that Kikinis does not disclose any of the key elements of the Patents-in-Suit. Kikinis has no frame device and is not directed towards displaying images. Furthermore, Kikinis does not disclose an automatic update, but rather the initial configuration of a web appliance.

857. A POSITA would also recognize that Kikinis USPTO classification is 709/220. Class 709 is Electrical Computers And Digital Processing Systems: Multicomputer Data Transferring. Subclass 220 is Network Computer Configuring.

H. U.S. Patent No. 6,345,294 ("O'Toole")

858. O'Toole is titled "METHODS AND APPARATUS FOR REMOTE CONFIGURATION OF AN APPLIANCE ON A NETWORK" and discloses self-organizing distributed appliances (SODAs) that are local devices that store video so that video can be served on a local network to users instead of from the server. Essentially, if a user is using his computer and requests a video to be played, if a SODA appliance already has that video cached, then the request received by the server from the user's computer is redirected to the SODA appliance so that video is instead served from the locally installed SODA appliance to the user's computer. This saves bandwidth because the video then does not have to be served from the server.

859. The SODA also has a "remote boot capability and remote configuration capability that allows the appliance to obtain the information it needs to boot and configure itself from an appliance registry," such as network parameters for communicating with servers. O'Toole at 7:7-15, 7:61-67.

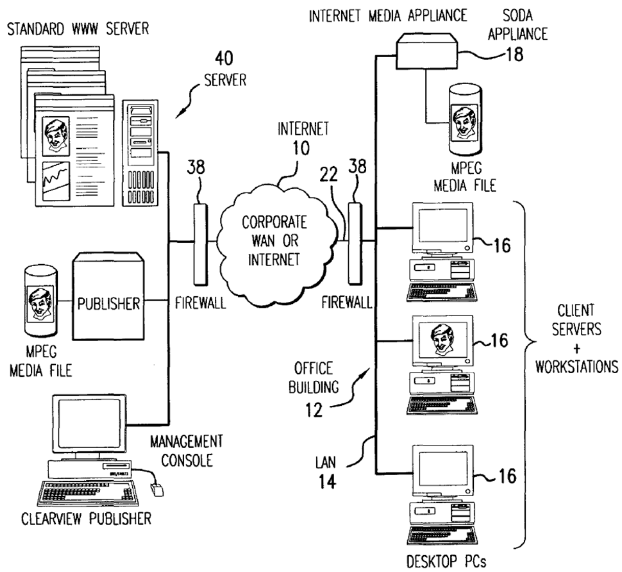


FIG.1

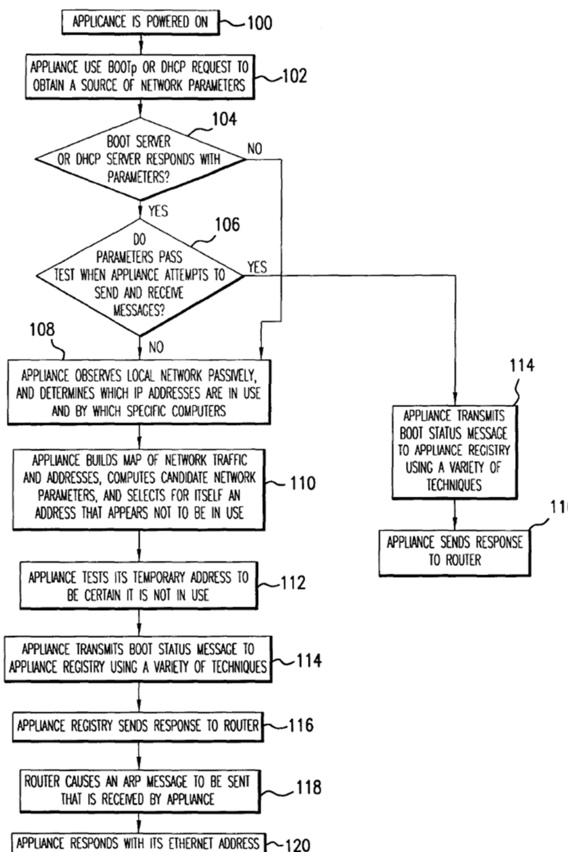


FIG.4

860. O'Toole describes its technology as follows:

> The invention provides a network appliance that is capable of remote booting and is capable of obtaining its configuration information from a source located far away. The network appliance can be shipped to a business location or office environment without requiring a local boot server in that location or environment and without requiring the presence of a person who is familiar with and highly skilled in configuring the appliance."

O'Toole at 7:7-15, 7:61-67.

861. Item 18 in FIG. 1 is the SODA appliance. O'Toole further describes the SODA appliance as "[s]elf-organizing distributed appliances (SODAS) according to the invention augment the Internet by providing a self-organizing network that efficiently distributes big data items, i.e., data items that cannot be downloaded timely (on demand) over today's networks." O'Toole at 3:40-44. A POSITA would recognize that this SODA appliance has no display and no means of user input.

862. A POSITA would recognize that O'Toole is not in the same field as the Patents-in-Suit. O'Toole is not directed towards displaying images/photographs nor to frame devices.

863. O'Toole does not describe software updates, automatic or otherwise. What O'Toole does disclose is quite the opposite, the configuration of an appliance that can only be updated by a specific computer: "The aspect of the registry that securely keeps track of which appliances belong to a given computer corresponding to an owner of the appliance ensures that the configuration data for a specific appliance can be updated only by the computer that controls that appliance." O'Toole at 13:41-45.

864. A POSITA would recognize that O'Toole does not disclose a system for distributing image data. In fact, the word "image" only appears one time in O'Toole, and that is part of a description of HTML: "Web pages are usually formatted using HTML, and inside of this particular web page, HTML information is provided that causes the browser to download

additional images or other web pages that are components of the web page that the browser is attempting to display." O'Toole at 16:67-17:5.

865. A POSITA would immediately recognize that O'Toole does not disclose a frame device. In fact, O'Toole does not even require any sort of display: "A typical networking appliance product, which might or might not have a keyboard or monitor and which might not yet have been configured except for some factory standard material incorporated into it, must boot when installed into a local area network, and then a person near that appliance can configure the appliance by filling out forms or typing in parameters into screens or into a terminal." O'Toole at 1:22-28.

866. Figure 1 of O'Toole also is informative on this issue. O'Toole describes this figure as: "a block diagram of a distributed computer system that includes appliances according to the invention." O'Toole at 3:54-55. O'Toole also states: "FIG. 1 illustrates the architecture of a distributed computer system that includes appliances that can be used to distribute high bandwidth media content, such as video files received over the internet, so that they can be served with high performance in a local area network." Figure 1 is shown here:

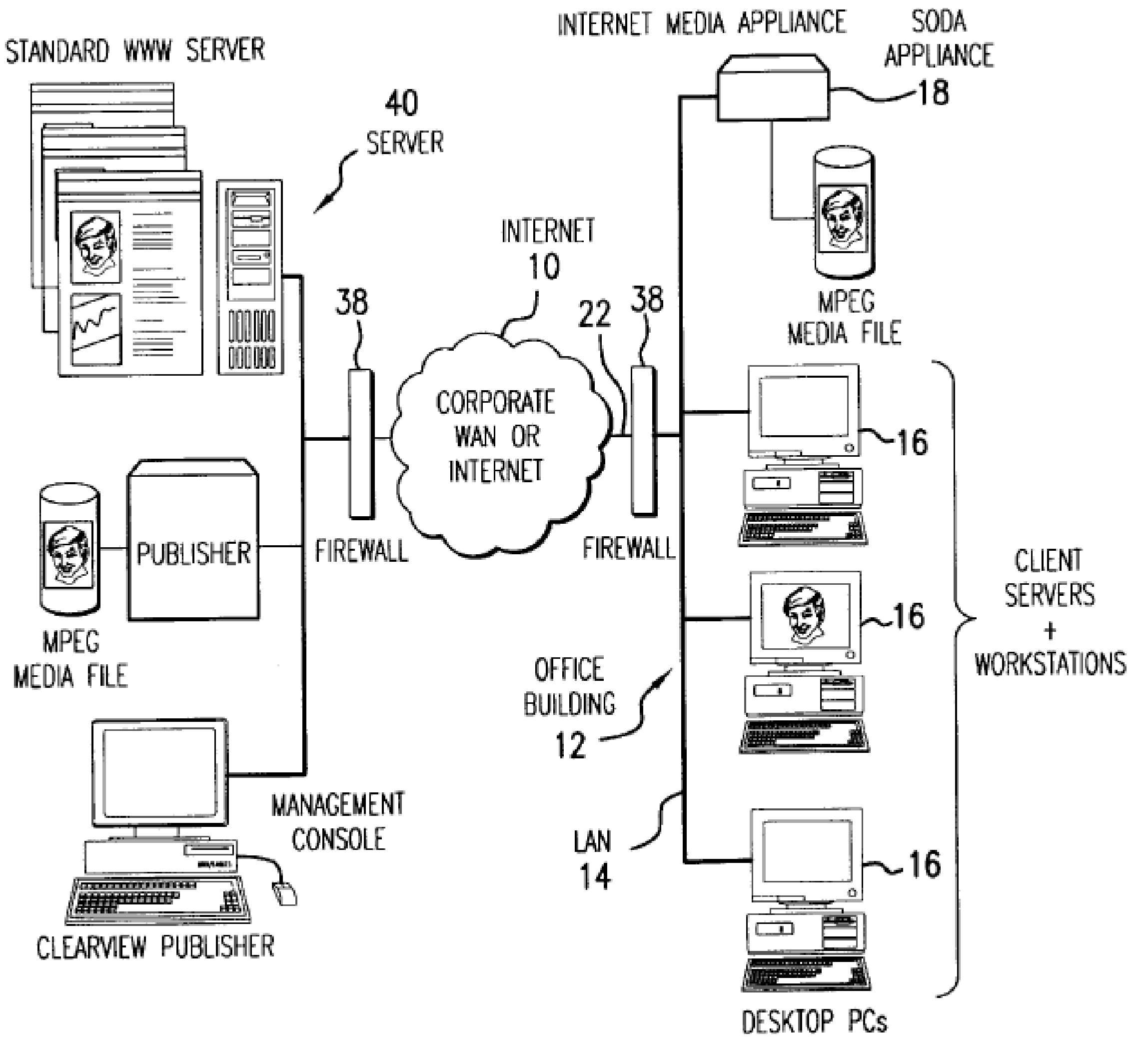


FIG.1

867. O'Toole describes item 18, the SODA appliance, as an example of a "Self-organizing distributed appliances (SODAS)," which according to the invention, "augment the Internet by providing a Self-organizing network that efficiently distributes big data items, i.e., data items that cannot be downloaded timely (on demand) over today's networks." O'Toole at 3:40-44. A POSITA would recognize that this SODA appliance has no display and no means of user input.

Thus, the SODA cannot be the frame device of the Patents-in-Suit. The only possible displays or user inputs are the Personal PC's, which are simply typical computers and cannot be the frame device of the Patents-in-Suit.

868. I also note that another prior art reference that Amazon cites, Bandaru, also states that a PC is not appropriate for a picture frame: "Even though a laptop PC is portable, the laptop PC is inadequate for use as a picture frame because not only does the laptop PC have to be reconfigured so that it is capable of processing the image data, but it is also too expensive to use a laptop PC as a picture frame." Bandaru at 1:39-43.

869. Updates in O'Toole are not software updates, and are done manually. This is shown in the following excerpt from O'Toole: "The updates at the root are performed through a Web based interface so that the administrator of the information stored at the root can be physically separated from the root machine itself." O'Toole at 23:61-65.

I. U.S. Patent No. 7,072,932 ("Stahl")

870. Stahl is titled "PERSONALIZED NETWORK-BASED SERVICES" and discloses a system that allows for internet service providers (ISPs) to transmit "customized information" to devices based on user profiles.

871. Stahl states: "[t]he present invention relates to computer networks, such as the Internet, and, in particular, to receiving and storing customized sets of information from various network-based information services." Stahl at 1:6-10.

FIG. 1

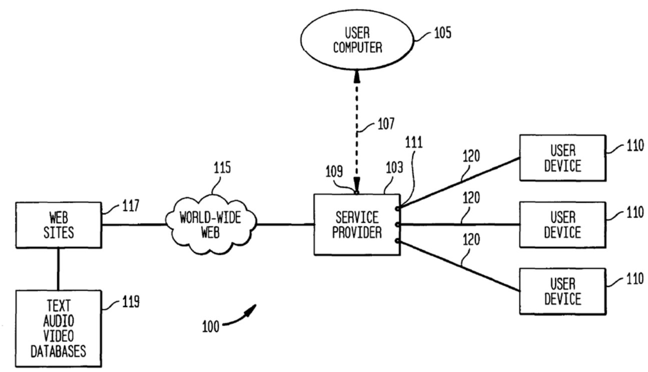
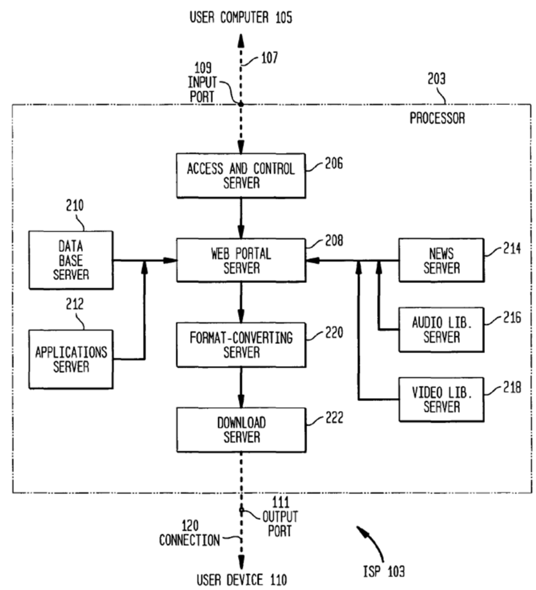


FIG. 2



872. In Stahl, ISP 103 "receives the user profile and begins to prepare customized information requested in the user profile," and "[d]uring the preparation of the customized information, ISP 103 may utilize a plurality of databases 119 connected to world-wide web 115," where the databases 119 "include text, audio, and video databases." Stahl at 4:55-60. The databases include:

> A news database that provides a summary of current news;
>
> A training and reference database that provides various local training and/or reference services;
>
> A communications database that provides web-based radio and/or television programming;
>
> A video-on-demand database that provides videos on demand;
>
> A music database that provides different music; and
>
> A communicator database that provides alerts of special events or items requiring attention.

Stahl at 4:61-5:5.

873. Stahl was attempting to address a problem with "traditional web portals" that allowed "users to specify customized sets of information in user profiles," but that only provided "little flexibility, however, in selecting the format for such information." Stahl at 1:28-33. Stahl thus included a "format-converting server 220 which facilitates the preparation of the desired information in the format specified by the user," such as in an audio format or a video format. Stahl at 5:52-57, 7:27-31.

874. Stahl is directed to obtaining information from network based services: "The present invention relates to computer networks, such as the Internet, and, in particular, to receiving and storing customized sets of information from various network-based information services." Stahl at 1:6-10.

875. A POSITA would immediately recognize that Stahl is not in the same field as the Patents-in-Suit. Stahl is not directed towards displaying photographs or images. Stahl has no frame device. Stahl does not even disclose software updates, automatic or manual.

J. U.S. Patent No. 6,553,490 ("Kottapurath")

876. Kottapurath is titled "COMPUTER SYSTEM INCLUDING LOCAL COMPUTER WITH CAPABILITY TO AUTOMATICALLY UPDATE OPERATING SYSTEM OR APPLICATION PROGRAM FROM NETWORK SERVER" and is directed towards updating an operating system or an application.

877. Kottapurath discloses a procedure for updating a computer's software or operating system upon startup by checking the computer's software version against a version stored at a server, as shown in FIG. 3 below.

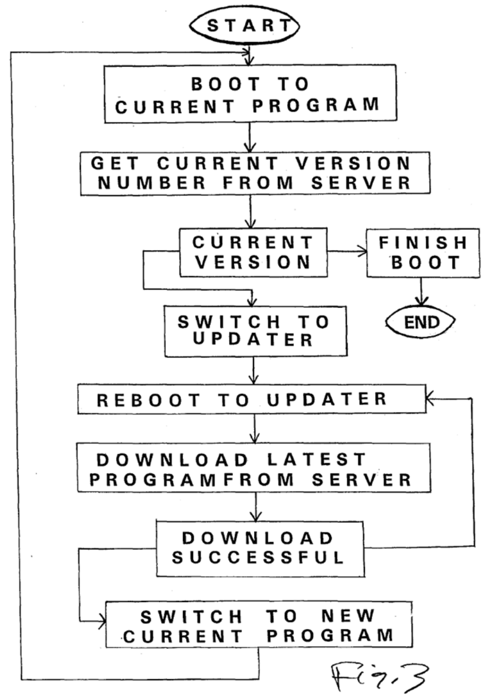


Fig. 3

878. Kottapurath is thus directed towards updating an operating system or an application. A POSITA would recognize that Kottapurath is in a completely different field than the Patents-in-Suit. Kottapurath is not related to displaying photographs/images and has no frame device.

879. Furthermore, a POSITA would recognize that there is no motivation to combine Kottapurath with any of the other asserted prior art. Kottapurath would not be improved by any combination with Hoyle, Nishiyama, Kikinis, Windows 98, or any other combination of asserted prior art.

880. Nishiyama is directed towards delivering advertisements. It is not even clear how one would combine Nishiyama with Kottapurath. If one were to make such a combination, it would not result in any improvements to the stated purposes of either Kottapurath or Nishiyama. Kottapurath would not have its updating process improved, and Nishiyama would not improve its ability to display advertisements.

881. Hoyle is also directed towards delivering advertisements. It is not even clear how one would combine Hoyle with Kottapurath. If one were to make such a combination, it would not result in any improvements to the stated purposes of either Kottapurath or Nishiyama. Hoyle would not have its updating process improved, and Hoyle would not improve its ability to display advertisements.

882. Kikinis is directed towards the initial configuration of an internet appliance. There is no reason to combine it with Kottapurath as they are directed towards separate goals. If one were to combine Kikinis with Kottapurath, the hybrid would not improve either the purposes of Kikinis or of Kottapurath.

K. U.S. Patent No. 5,657,390 ("Elgamal")

883. Elgamal is titled "SECURE SOCKET LAYER APPLICATION PROGRAM APPARATUS AND METHOD" and is directed to client-server SSL communications.

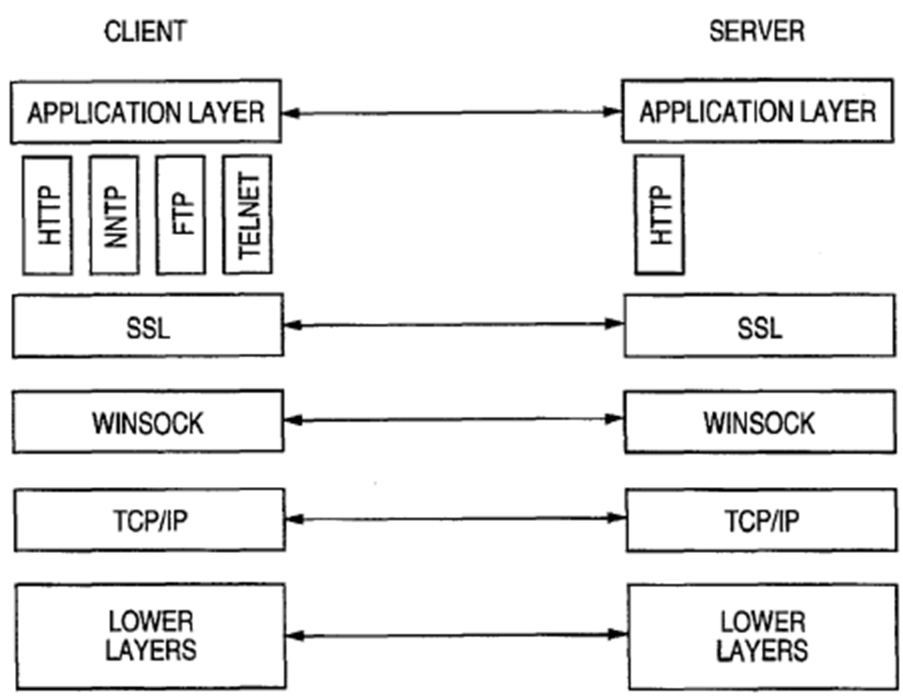


FIG. 10

884. Elgamal is a key exchange protocol. It was first described by Taher Elgamal in 1984. Elgamal is based on the Diffie Hellman key exchange algorithm and has similarities to Diffie Hellman. The Elgamal algorithm has three components: the key generator, the encryption algorithm, and the decryption algorithm.[76] The algorithm is shown here:[77]

A. First, the first party to generate their public and private key he or she must select a prime p and a generator g. The g value is an element of the set of integers modulo p.

B. Next a random integer b is selected, and a value is computer $K = g^b \bmod p$.

C. p, g, and K are published as the public key (note that b is not)

D. The other party takes that public key (p, g, and K) and chooses a random value a.

E. Next a shared secret $s = B^a$ is calculated.

885. A POSITA would recognize that this algorithm is not a device of any time, much less a digital display device.

886. The Elgamal patent explains that the "SSL library establishes a sockets connection with an application running on a remote computer and then performs a security handshake." Once the security handshake is complete, "the SSL library then encrypts and decrypts all data sent to and received from a remote host computer through the socket connection." Elgamal at 5:30-35.

887. The general description included in the Elgamal patent describes authentication of the client and server. Data transferred between client and server "can be encrypted/decrypted as it is channeled through the socket," but, "before any data is transferred, the client and the server must negotiate an encryption technique for the data transfer, ***authenticate the connected parties (server and possibly client too)***, and check the integrity of the agreed upon secure connection."

[76] https://math.asu.edu/sites/default/files/elgamal.pdf

[77] https://mathstats.uncg.edu/sites/pauli/112/HTML/secelgamal.html

Elgamal at 7:2-8. During the handshake, the server responds to a "client-hello message" with a "server_certificate" that is "issued to the server through well-known techniques and is used to certify the authenticity of the server." Elgamal at 7:20-26.

888. The client can also be authenticated by the server sending the following:

> a request-certificate message which includes authentication_type and challenge data encrypted with the server_write key (one of the earlier agreed upon master keys). The authentication-type specifies an encryption technique to be used to authenticate the client; several authentication techniques can be supported by a current embodiment of the invention as explained in a following section. The challenge data is used in the authentication process. A client-certificate message is sent by the client to the server.

Elgamal at 10:26-35.

889. The client-certificate message includes "response data" that "contains authentication response data which is a function of the authentication_type sent by the server in the request-certificate message." Elgamal at 10:35-46.

890. A POSITA would further understand that Elgamal does not disclose a system distributing images or photos, nor does it disclose software updates, automatic or otherwise. Elgamal does disclose that computer systems can use Elgamal, but these are not part of Elgamal. In fact, the only systems that are discussed in Elgamal are typical personal computers, such as shown in figure 2.

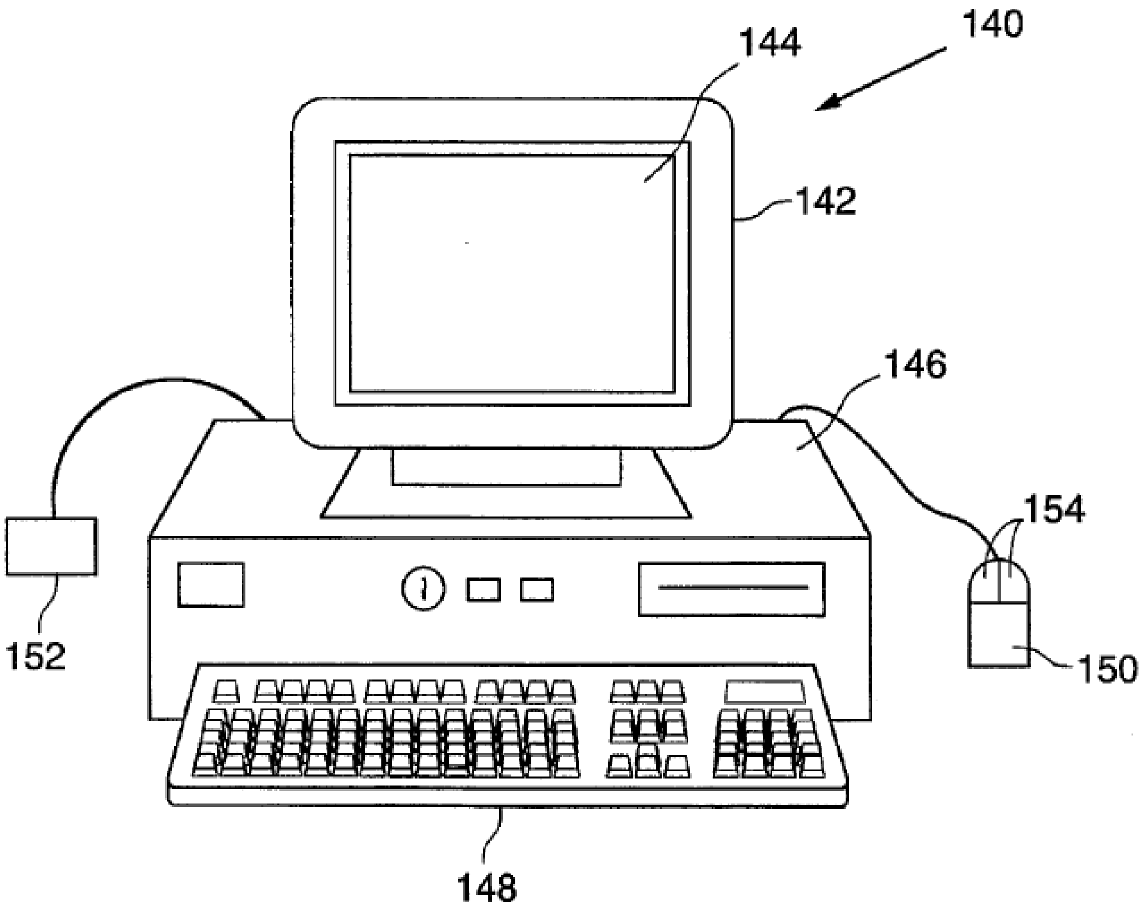


FIG. 2

891. A POSITA would recognize that what is in Figure 2 is not a component of Elgamal, but rather a computer that might use Elgamal for secure communications. Furthermore, a POSITA

would recognize that this computer is a typical PC with a separate monitor, and not the integrated frame device of the Patents-in-Suit.

892. Furthermore, a POSITA would recognize that Elgamal is not configured to operate according to preferences defined by a user. Elgamal is transparent to the user. The user is often not even aware that Elgamal is being used, and cannot configure it.

893. Elgamal is a cryptographic protocol and does not have any user interface. A POSITA would recognize that the only user interface described in Elgamal is a general description of how HTML and HTTP work, and not a description of Elgamal. The description appears in "HTML Documents and HTTP." Elgamal at 3:56. The only mention of a user interface is: "By providing uniform protocols so that clients may request objects and servers may deliver objects to clients, computers on the Internet are able to easily transfer different types of information such as text and images. By using the HyperText concept an efficient user interface is provided to a human user that allows the user to discover what information is available and to request the information." Elgamal at 4:5-12. A POSITA would recognize this as a description of HTML communications over the internet, and not a description of Elgamal.

894. A POSITA would also recognize that since Elgamal does not include a user interface, it cannot have a user interface that is physically separable from at least one frame device. Furthermore, Elgamal does not and cannot have an image display list defined by a user.

895. A POSITA would also recognize that Elgamal, as it does not have any images, cannot have at least one server system configured to generate package data comprising image data and said preferences.

896. A POSITA would also recognize that there is no reason to combine Elgamal with SSL, or TLS as both SSL and TLS already have key exchange protocols.

L. The Transport Layer Security Protocol Version 1.0 ("RFC 2246")

897. RFC 2246 is the standard for the Transport Layer Security (TLS) protocol.[78] The goals of TLS are explained in the introduction to the standards document: "The primary goal of the TLS Protocol is to provide privacy and data integrity between two communicating applications. The protocol is composed of two layers: the TLS Record Protocol and the TLS Handshake Protocol. At the lowest level, layered on top of some reliable transport protocol (e.g., TCP[TCP]), is the TLS Record Protocol."[79]

898. TLS 1.0 was released in 1999. It was essentially an upgrade to SSL 3.0. However, it was not compatible with SSL 3.0. TLS 1.0 also added support for GOST hashing algorithm as an option for message authentication and integrity. Previous versions had only supported MD5 and SHA-1 as hashing message authentication codes.

899. TLS 1.0 was eventually supplanted by TLS 1.1 released in April 2006. It had a number of specific cryptographic improvements including improved initialization vectors as well as supporting cipher block chaining for AES.

900. In August of 2008, TLS 1.2 was released as RFC 5246. It had many improvements over previous versions.

901. TLS 1.3 was defined in RFC 8446 in August 2018. This new version offers a number of improvements for security.

902. RFC 2246 discloses how to secure internet communications. That involves encrypting said communications, including a key exchange process. Particularly, RFC 2246 describes:

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[78] https://www.ietf.org/rfc/rfc2246.txt

[79] https://datatracker.ietf.org/doc/html/rfc2246

The TLS Record Protocol is used for encapsulation of various higher level protocols. One such encapsulated protocol, the TLS Handshake Protocol, allows the server and client to authenticate each other and to negotiate an encryption algorithm and cryptographic keys before the application protocol transmits or receives its first byte of data. The TLS Handshake Protocol provides connection security that has three basic properties:

- The peer's identity can be authenticated using asymmetric, or public key, cryptography (e.g., RSA [RSA], DSS [DSS], etc.). This authentication can be made optional, but is generally required for at least one of the peers.

- The negotiation of a shared secret is secure: the negotiated secret is unavailable to eavesdroppers, and for any authenticated connection the secret cannot be obtained, even by an attacker who can place himself in the middle of the connection.

- The negotiation is reliable: no attacker can modify the negotiation communication without being detected by the parties to the communication.

One advantage of TLS is that it is application protocol independent. Higher level protocols can layer on top of the TLS Protocol transparently. The TLS standard, however, does not specify how protocols add security with TLS; the decisions on how to initiate TLS handshaking and how to interpret the authentication certificates exchanged are left up to the judgment of the designers and implementors of protocols which run on top of TLS.[80]

903. TLS Protocol also describes that the protocol involves the following:

F.1.1. Authentication and key exchange TLS supports three authentication modes: authentication of both parties, server authentication with an unauthenticated client, and total anonymity. Whenever the server is authenticated, the channel is secure against man-in-the-middle attacks, but completely anonymous sessions are inherently vulnerable to such attacks. Anonymous servers cannot authenticate clients. If the server is authenticated, its certificate message must provide a valid certificate chain leading to an acceptable certificate authority. Similarly, authenticated clients must supply an acceptable certificate to the server. Each party is responsible for verifying that the other's certificate is valid and has not expired or been revoked.

The general goal of the key exchange process is to create a pre_master_secret known to the communicating parties and not to attackers. The pre_master_secret will be used to generate the master_secret (see Section 8.1). The master_secret is required to generate the certificate verify and finished messages, encryption keys, and MAC secrets (see Sections 7.4.8, 7.4.9 and 6.3).

[80] https://www.ietf.org/rfc/rfc2246.txt (RFC 2246) at 4.

By sending a correct finished message, parties thus prove that they know the correct pre_master_secret.[81]

904. A POSITA would first recognize that RFC 2246 is not a device of any type, much less a frame device. RFC 2246 does not disclose a system distributing images or photos, nor does it disclose software updates.

905. RFC 2246 discloses how to secure internet communications. That involves encrypting said communications, including a key exchange process. A POSITA would recognize that this is completely unrelated to the Patents-in-Suit.

M. Fujitsu Stylistic 1000 Tablet Computer ("Stylistic Tablet")

906. It should be noted that the Fujitsu Stylistic Tablet 1000 and the Fujitsu Stylistic 1000 RF are two separate models. The Fujitsu Stylistic 1000 RF was a tablet that ran the Windows 95 Operating System.[82] In addition to specification pages available online that indicate "[t]he Stylistic 1000 is designed for Windows 95,"[83] this is further demonstrated by the quote:

We've taken the most powerful Windows 95 tablet in the world and unplugged it. Customers now have roaming access to the full resources of their enterprise.[84]

907. Dr. Johnson generally alleges that the Stylistic Tablet could run Windows 98, and provides the following images of the Stylistic Tablet:

[81] https://www.ietf.org/rfc/rfc2246.txt (RFC 2246) at 69.

[82] https://web.archive.org/web/19970623222759/http://www.fpsi.fujitsu.com/products/ST1RFSP.htm.

[83] https://web.archive.org/web/19970623222815/http://www.fpsi.fujitsu.com/products/periph.htm.

[84] https://web.archive.org/web/19970623222934/http:/www.fpsi.fujitsu.com/market/ST1ORFPS.HTM.


STYLISTIC 1000
Microsoft
Windows98
FUJITSU

Johnson ¶¶529-34.

908. It must be noted that the Stylistic Tablet (either the 1000 or the 1000RF) did not come with Windows 98, rather it came with Windows 95. At no point does Dr. Johnson assert that the Stylistic 1000 Tablet running Windows 95 anticipates or renders obvious the asserted claims of the Patents-in-Suit. In fact, one of Dr. Johnson's own citations states: "The Stylistic 1000 RF also carries the 'Designed for Microsoft Windows 95' logo, and is configured with the Microsoft Pen Services 2.0 interface."[85] To use Windows 98 on this device (either the 1000 or the 1000RF) would mean to use it in a manner it was not designed for. Furthermore, that same reference states that the Stylistic 1000 RF had "a 1.6 megabits per second (Mbps) data transfer rate." That is the low end of the speed of 802.11, even before 802.11a.[86] Automatically connecting via dial up would cause the user's phone system to be automatically engaged, even if the user was currently using the phone.

909. Furthermore, that same reference provided by Dr. Johnson states: "The Stylistic 1000 RF is compatible with Novell NetWare, Personal NetWare and TCP/IP protocols. ODI and NDIS LAN." The Netware client for Windows 98 was different than the one required for Windows 95.[87] This means that to use Windows 98, the user would first have to upgrade that client. There are multiple instances of users struggling with that process documented on the internet.[88] In fact, the book "*Using Windows 98*" devotes an entire chapter (chapter 40) to making Windows 98 work with Novell Netware. This demonstrates that such an action is non-trivial.

85 https://web.archive.org/web/19970623222934/http://www.fpsi.fujitsu.com/market/ST1ORFPS.HTM

86 https://www.pearsonitcertification.com/articles/article.aspx?p=1329709&seqNum=4

87 https://www.zx.net.nz/netware/client/9x.shtml

88 https://arstechnica.com/civis/threads/drdos-win98-personal-netware.936608/

910. Dr. Johnson's entire analysis related to the Stylistic Tablet is predicated on it running an operating system that it did not actually ship with, and then connecting that device to a network with a speed of at most 1.6 megabits per second. This would make activities that Dr. Johnson points to, such as automatic subscriptions, simply untenable.

911. This is further demonstrated by the following image:[89]

912. A POSITA would immediately recognize that the Fujitsu Stylistic 1000 RF is not directed towards distributing image data. Furthermore, a POSITA would recognize that the Fujitsu Stylistic 1000 RF discloses a tablet, not the frame device of the Patents-in-Suit.

913. Furthermore, a POSITA would note that nothing in the Fujitsu Stylistic 1000 RF discloses automatic updating. Furthermore, Dr. Johnson does not point to anything in the Sytlistic

[89] Taken from Amazon's Invalidity chart Ex A-07

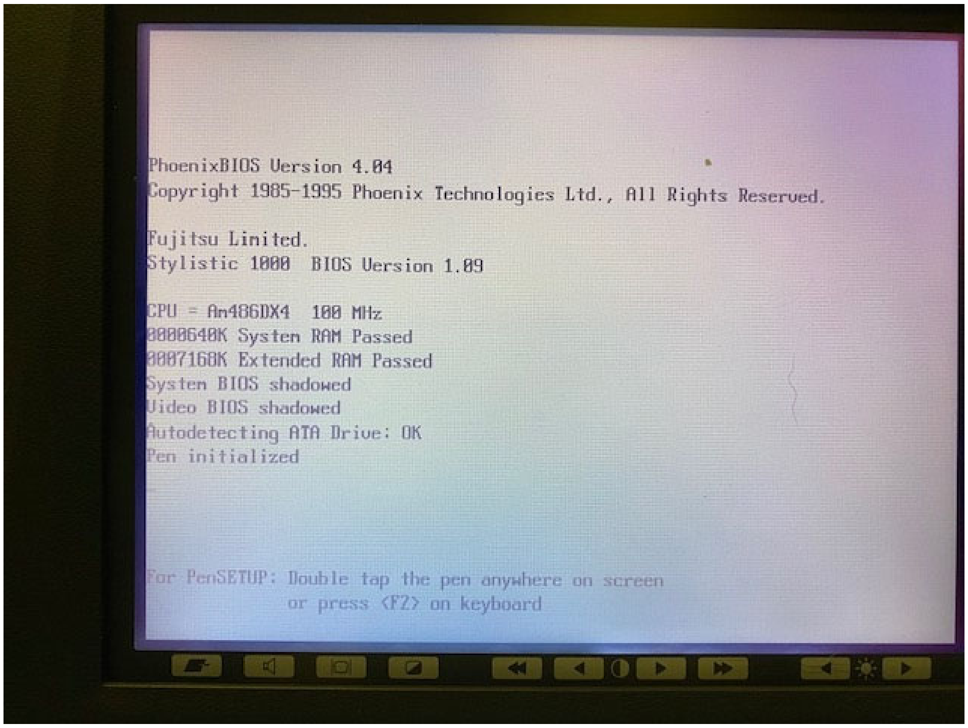
Tablet that does any update. Rather, Dr. Johnson points to Windows 98, which did not ship with the Stylistic Tablet, and which had a very manual update process.

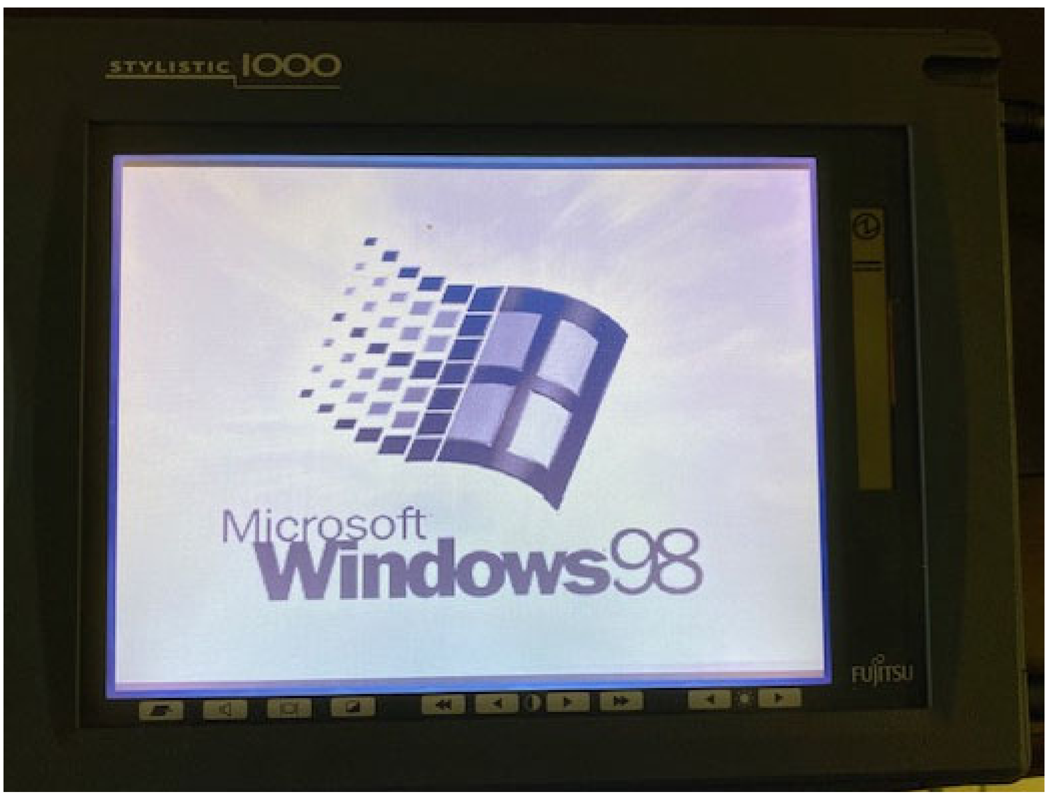
914. Furthermore, a POSITA would recognize that the Fujitsu Stylistic 1000 RF having wireless communications does not disclose being "coupled to a server." Additionally, a POSITA would understand that the Windows client operating systems related to the Fujitsu Stylistic 1000 RF (Windows 95, Windows 98, Windows for Workgroups) are specifically designed to work without a server. This also demonstrates that the Fujitsu Stylistic 1000 RF does not disclose providing said image data and said preferences to at least one server system. Nor does the Fujitsu Stylistic 1000 RF disclose at least one server system configured to periodically relay said image data and said preferences to said at least one frame device.

915. Furthermore, a POSITA would recognize that combining the Fujitsu Stylistic 1000 RF with either SSL, Elgamal, or TLS would not convey any particular advantage to either. It should also be noted that SSL, Elgamal, and TLS are not devices that can be combined with other devices. Rather they are protocols that can be used.

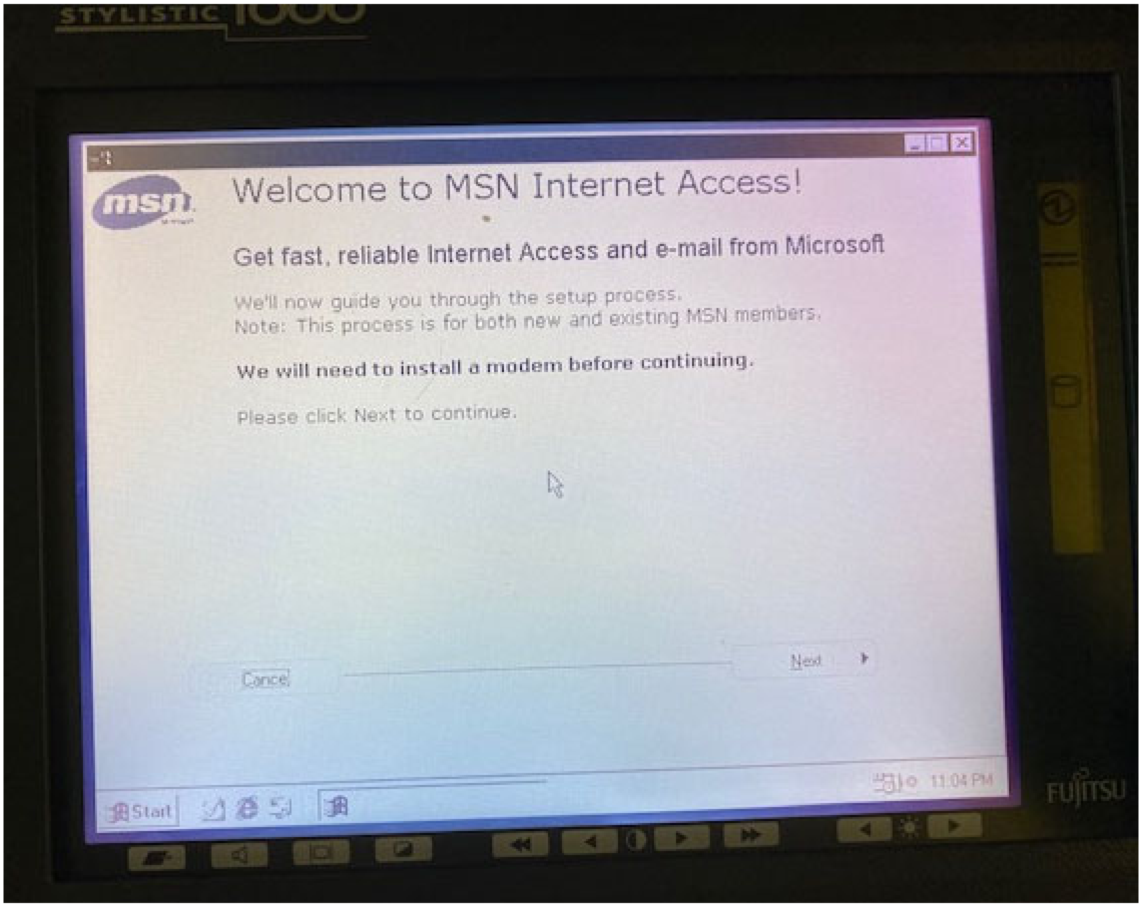
916. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 Technical Reference Guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. Screenshots are provided here:

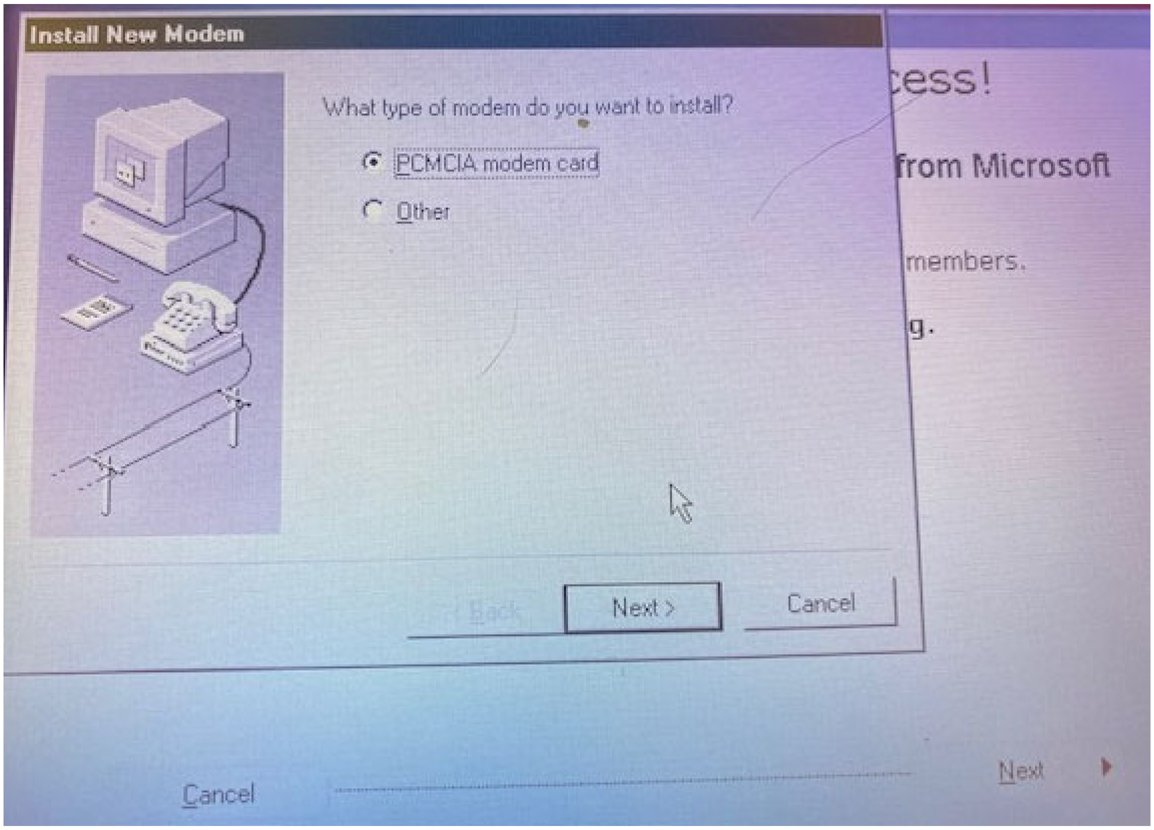
CONFIDENTIAL





CONFIDENTIAL

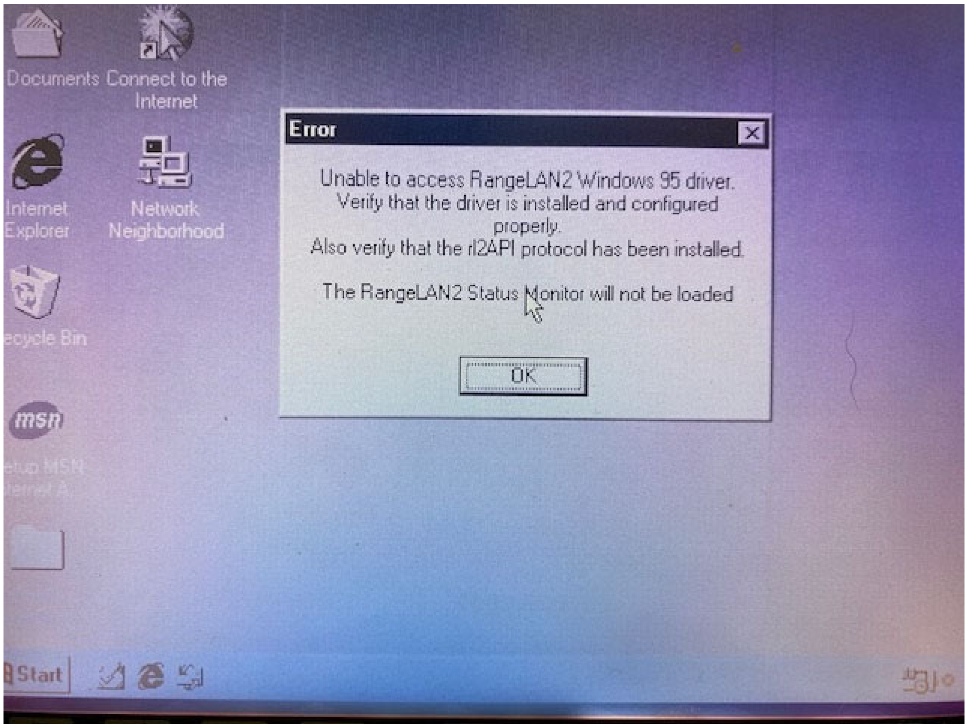




917. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet. A modem requires one to dial up each time one wishes to connect. At the time, this also involved data usage charges. Connecting to the internet via a dial up modem was a manual process.

918. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites a Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should

be considered for only the most basic operations."[90] I noted that in using a Stylistic Tablet 1000 running Windows 98 there were numerous problems including sluggish performance and missing drivers. One such driver error is shown in the following image:



919. A POSITA would not have been motivated to combine Windows 98 with the Fujitsu Stylistic Tablet.

N. Windows 95

920. Windows 95 is an operating system for personal computers. It is not a frame device, nor is it directed to distributing images/photos. The only imaging software that is part of Windows 95 is not for distributing images to frame devices; it is for local images on that computer to be viewed manually.

921. Furthermore, a POSITA would understand that the Windows client operating systems (Windows 95, Windows 98, Windows for Workgroups) are specifically designed to work

[90] *Using Windows 98* Platinum Edition, page 968.

without a server, and are not "coupled to a server." The possible ability to retrieve data from a server, such as a web server on the internet, is not being "coupled to a server." Furthermore, a POSITA would recognize that Windows 95 does not disclose providing said image data and said preferences to said at least one server system.

922. Windows 95 is an operating system; its user interface is part of the operating system. A POSITA would recognize that this is not physically separable from at least one frame device.

O. Windows 98

923. Windows 98 is a version of Microsoft's Windows operating system for personal computers. Dr. Johnson cites to different sources describing Windows 98 and its features, such as Platinum Edition *Using Windows 98* ("*Using Windows 98*")[91] from 1998 and Microsoft Windows 98 Resource Kit, Microsoft Professional Editions ("Windows 98 Resource Kit")[92] from 1998. Johnson ¶491. PC operating systems generally include or can run applications that include various functionalities. Since PC operating systems were typically run on devices with more resources, such as a desktop computer, configuring PC operating systems such as Windows 98 to run on devices with less-resources was not usually a priority. Windows 98 is not directed to a display device, nor is it directed to distributing images/photos. The only imaging software that is part of Windows 98 is not for distributing images to frame devices; it is for local images on that computer to be viewed manually.

924. Furthermore, a POSITA would understand that the Windows client operating systems (Windows 95, Windows 98, Windows for Workgroups) are specifically designed to work

[91] AMZ_CEIVA-PA00005651-AMZ_CEIVA-PA00006802.

[92] AMZ_CEIVA-PA00003342-AMZ_CEIVA-PA00005139.

without a server and are not "coupled to a server." The possible ability to retrieve data from a server, such as a web server on the internet, is not being "coupled to a server." Furthermore, a POSITA would recognize that Windows 98 does not disclose providing said image data and said preferences to said at least one server system.

925. Windows 98 is an operating system; its user interface is part of the operating system. A POSITA would recognize that this is not physically separable from at least one frame device.

926. Furthermore, a POSITA would recognize that the update process in Windows 98 is not automatic. In fact, it requires the user to take specific, manual steps.

P. SSL/TLS

927. Secure Sockets Layer is a protocol for encrypting internet communications. It has been supplanted by Transport Layer Security (TLS). The goals of SSL are: (i) cryptographic security; (ii) interoperability so that different applications can use SSL; (iii) the ability to be extended; and (iv) efficiency.[93]

928. The goals of SSL version 3 state: "The primary goal of the SSL protocol is to provide privacy and reliability between two communicating applications. The protocol is composed of two layers. At the lowest level, layered on top of some reliable transport protocol (e.g., TCP [RFC0793]), is the SSL record protocol. The SSL record protocol is used for encapsulation of various higher-level protocols. One such encapsulated protocol, the SSL handshake protocol, allows the server and client to authenticate each other and to negotiate an encryption algorithm and cryptographic keys before the application protocol transmits or receives

[93] https://www.rfc-editor.org/info/rfc6101

its first byte of data. One advantage of SSL is that it is application protocol independent. A higher-level protocol can layer on top of the SSL protocol transparently."[94]

929. Section 6.1.2 of SSL version 3 discloses the use of the Diffie Hellman key exchange protocol with SSL.

930. The process of establishing an SSL/TLS connection is rather complex. The specific steps are described here:

A. Communication begins with the client sending a Hello message. That message contains the client's SSL version number, cipher settings (i.e., what algorithms can the client support), session-specific data, and other information that the server needs to communicate with the client using SSL.

B. The server responds with a server Hello message. That message contains the server's SSL version number, cipher settings (i.e., what algorithms the server can support), session-specific data, and other information that the client needs to communicate with the server over SSL. The server also sends the client the server's X.509 certificate. The client can use this to authenticate the server and then use the server's public key. In some optional configurations, client authentication is required. In that case, part of the server Hello message is a request for the client's certificate. It should be noted that client authentication is not generally used in e-commerce as it would require each and every client to have an X.509 certificate from a well-known and trusted certificate authority. If e-commerce sites did request such a certificate, it might reduce online fraud, but would also add an extra burden and cost to consumers. Consumers would have to purchase a certificate, at an average cost of $19.95 per year.

[94] https://datatracker.ietf.org/doc/html/rfc6101

C. Now the client uses the server's X.509 certificate to authenticate the server. It does this by retrieving the public key of the certificate authority who issued this X.509 certificate and using that to verify the CA's digital signature on the X.509 certificate. Assuming authentication works, the client can now proceed with confidence that the server is indeed who they claim to be.

D. Using all data generated in the handshake thus far, the client creates the pre-master secret for the session, encrypts it with the server's public key (obtained from the server's certificate, sent in step 2), and then sends the pre-master secret to the server.

E. If the server is configured to require client authentication, then at this point the server requires the client to send to the server the clients X.509 certificate. The server will use this to attempt to authenticate the client.

F. If client authentication is required and the client cannot be authenticated, the session ends. If the client can be successfully authenticated, the server uses its private key to decrypt the pre-master secret that the client sent to it.

G. Both the client and the server use the pre-master secret that was sent from the client to the server to generate the session keys. The session keys are symmetric keys and use whatever algorithm the client and server have agreed upon in steps 1 and 2 of the handshake process.

H. Once the client has completed generating the symmetric key from the pre-master secret, the client sends a message to the server stating that future messages from the client will be encrypted with the session key. It then sends an encrypted message indicating that the client portion of the handshake is finished.

I. Once the server has completed generating the symmetric key from the pre-master secret, the server sends a message to the client informing it that future messages from the server will be encrypted with the session key. The server then sends an encrypted message indicating that the server portion of the handshake is finished.

931. The Client Hello consists of the following element:

A. Protocol version. This indicates if this is SSL version 3, TLS version 1.1, etc.

B. Random Number. This is a 32-byte random number. The first four bytes are the time of the day in seconds, the next 28 bits are just a random number. This is used to prevent replay attacks.

C. Session ID. This is a 32-byte number that is used to identify a given SSL/TLS session.

D. Compression algorithm. If compression is used in transmission, the specific algorithm is provided here.

E. Cipher Suite. This is a list of the cryptographic algorithms the client is capable. Often this will be common symmetric ciphers such as Blowfish, AES, etc. It may also include hashing or message authentication code algorithms the client is capable of in order to allow for message integrity.

932. The server hello is quite similar. It consists of the following elements:

A. Protocol version. This indicates if this is SSL version 3, TLS version 1.1, etc.

B. Random Number. This is a 32-byte random number. The first four bytes are the time of the day in seconds, the next 28 bits are just a random number. This is used to prevent replay attacks.

C. Session ID. This is a 32-byte number that is used to identify a given SSL/TLS session.

D. Compression algorithm. The server selects one of the algorithms the client has indicated it can support.

E. Cipher Suite. The server selects one of the algorithms the client has indicated it can support.

933. During the handshake, and throughout the SSL/TLS communication process, there are a number of specific error messages that both client and server send to one another. The most critical of these messages is shown in the following table:

Message	Description
unexpected_message	The message sent by the other party (client or server) is inappropriate and cannot be processed
bad_record_mac	Incorrect Message Authentication Code. This indicates that message integrity may be compromised.
decryption_failed	For some reason the party sending this message was unable to decrypt TLSCiphertext correctly
handshake_failure	Unacceptable security parameters, the handshake cannot be completed.
bad_certificate	There is a problem with the X.509 certificate that was sent.
unsupported_certificate	Certificate is unsupported. Either the type or format of the certificate cannot be supported.
certificate_revoked	Certificate has been revoked
certificate_expired	Certificate has expired
certificate_unknown	Certificate is unknown. This often happens with self-signed certificates.
unknown_ca	CA unknown. This also happens with self-signed as well as domain certificates.
access_denied	The other party is refusing to perform SSL/TLS handshake.
protocol_version	Protocol version not supported by both parties
insufficient_security	Security requirements not met. The minimum-security level of one party exceeds the maximum level of the other party. This is not a common error message.

934. A POSITA would recognize that integrating SSL or TLS with any other product is an involved process that must accommodate the steps just described and the possible error messages.

935. A POSITA would recognize that SSL or TLS is not in the same field as the Patents-in-Suit. SSL does not disclose a system for distributing image data. Furthermore, SSL does not disclose any device, much less a frame device.

936. A POSITA would also recognize that SSL or TLS does not provide said image data and said preferences to said at least one server system.

937. A POSITA would also recognize that SSL or TLS is not directed towards image distribution and thus does not and cannot disclose at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device.

938. Aside from these issues integration SSL or TLS with any device is a complicated matter.

XIII. THE ASSERTED CLAIMS ARE NOVEL AND NON-OBVIOUS

939. None of the asserted prior art anticipates any of the claim limitations of any of the Patents-in-Suit. Dr. Johnson appears to agree on that point and only asserts obviousness combinations.

940. In his obviousness analysis, Dr. Johnson frequently relies on assumptions based on yet other assumptions. For example, Dr. Johnson will assume some particular element that is not disclosed in a specific prior art citation would have been obvious, then will proceed to assert it would be obvious to combine that with another prior art reference, further assuming that the second prior art reference has elements that are not actually disclosed in it. This is not a proper argument for obviousness. Rather it is supposition building upon supposition.

941. Dr. Johnson's opening report also addresses claims that are no longer being asserted. Therefore, when I list below the specific grounds and prior art combinations asserted in Dr. Johnson's opening report, I have removed reference to the unasserted claims.

A. Alleged Bandaru Combinations

942. I first note that, as explained in Section XII.A, critical portions of Bandaru are not prior art to claims 2, 6, and 19 of the ’573 Patent, claims 1-8 and 15 of the ’930 Patent, and claims 1, 4, 11, 16-17, and 20 of the ’562 Patent. For this reason, all the combinations relying on Bandaru are defective and do not render the claims of the Patents-in-Suit obvious because Bandaru is not “prior art.” However, for completeness, I still analyze those claims below.

943. ’573 Patent: Dr. Johnson asserts that “Bandaru, in Combination with One or More of Elgamal, RFC 2246, Nishiyama, Criss, and Kottapurath, Invalidates the Asserted Claims of the ’573 Patent.” Johnson ¶507. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’573 Patent:

1. Claim 2 of the ’573 Patent is invalid in view of Bandaru in combination with one or Elgamal or RFC 2246;
2. Claim 19 of the ’573 Patent is invalid in view of Bandaru in combination with one of Nishiyama, Criss, or Kottapurath; and
3. Claim 6 of the ’573 Patent is invalid in view of Bandaru in combination with Nishiyama. Johnson ¶478.

944. ’930 Patent: Dr. Johnson asserts that “Bandaru, in Combination with One or More of Elgamal, RFC 2246, Criss, Kottapurath, Nishiyama, and Hoyle, Invalidates the Asserted Claims of the ’930 Patent.” Johnson ¶718. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’930 Patent:

1. Claims 1-4, 7, and 8 of the ’930 Patent are invalid in view of Bandaru in combination with:
    - one of Elgamal or RFC 2246, and
    - one of Criss or Kottapurath, alone or further in combination with
    - Nishiyama; and

2. Claims 5, 6, and 15 of the ’930 Patent are invalid in view of Bandaru in combination with:

- Hoyle, and
- one of Elgamal or RFC 2246, and
- one of Criss or Kottapurath, alone or further in combination with
- Nishiyama. Johnson ¶479.

945. ’656 Patent: Dr. Johnson asserts that “Bandaru, in Combination with One or More of Elgamal, RFC 2246, Criss, Kottapurath, and Kikinis, Invalidates the Asserted Claims of the ’656 Patent.” Johnson ¶888. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’656 Patent:

1. Claims 1, 2, and 5-8 of the ’656 Patent are invalid in view of Bandaru in combination with:

- one of Elgamal or RFC 2246, and
- one of Criss, Kottapurath, or Kikinis. Johnson ¶480.

946. ’562 Patent: Dr. Johnson asserts that “Bandaru, in Combination with One or More of Elgamal, RFC 2246, Nishiyama, Criss, Kottapurath, Kikinis, and Hoyle, Invalidates the Asserted Claims of the ’562 Patent.” Johnson ¶980. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’562 Patent:

1. Claims 1, 11, and 20 of the ’562 Patent are invalid in view of Bandaru in combination with:

- Hoyle, and
- one of Nishiyama, Elgamal, or RFC 2246, and
- one of Nishiyama, Criss, or Kottapurath, and
- one of Criss, Kottapurath, or Kikinis;

2. Claim 4 of the ’562 Patent is invalid in view of Bandaru in combination with:

- Hoyle, and

- Kikinis, and
- one of Nishiyama, Elgamal, or RFC 2246, and
- one of Nishiyama, Criss, or Kottapurath; and

3. Claims 16 and 17 of the ’562 Patent are invalid in view of Bandaru in combination with:
   - Hoyle, and
   - one of Elgamal or RFC 2246, and
   - one of Nishiyama, Criss, or Kottapurath, and
   - one of Criss, Kottapurath, or Kikinis. Johnson ¶481.

1. Claims 1 and 6 of the ’573 Patent are not invalid in view of Bandaru in combination with Nishiyama

947. I note that Claim 6 includes all the elements of Claim 1 of the ’573 Patent, and therefore I address the elements of Claim 1 below as well. Furthermore, as discussed previously in this report, a POSITA, as defined by Dr. Johnson, would likely not be skilled in the technologies of Nishiyma and thus be unable to combine Nishiyama with anything. It should also be noted that the USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*. The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*. Dr. Johnson defined a POSITA as a person with “a bachelor’s degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology.” The reference to that technology refers to the previous statement by Dr. Johnson: “The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming.” Johnson ¶18. Nothing in Dr. Johnson’s description suggest any skill in Interactive Video Systems—the primary field of Nishiyama. A review of undergraduate computer science courses offerred at Rice University, where Dr. Johnson is a professor, shows not even a single course in Interactive Video Systems, or any video system at all. Thus, a POSITA, as defined by Dr. Johnson, who had indeed graduated

from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Nishiyama.

2. Using Dr. Johnson's own definition of a POSITA, it is clear that such a POSITA would not be capable of combining Nishiyama with any other art.

i. Claim [1.a] at least one frame device

948. In reference to this claim limitation, Dr. Johnson claims the DMF of Bandaru meets what he alleges to be a definition of a frame device in the '573 Patent at 6:35-39. Johnson ¶513. That section of the '573 Patent states: "The present invention comprises one or more interconnected frame devices. A frame device is a self-configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric (e.g., a computer network)." '573 Patent at 6:34-39.

949. To show a repository, Dr. Johnson points to a user profile database in Bandaru, stating: "the DMF is connected via an interconnection fabric (i.e., Internet 718) to the DMF server 720, which includes a repository (i.e., user profile database 724), from which it obtains images for display." Johnson ¶518. However, in the very section of the '573 Patent that Dr. Johnson refers to, the repository of the '573 Patent is quite clearly not a user profile database, but rather an image repository from which the frame device "obtains images for display."

950. The user profile database 724 is mentioned only 5 times in Bandaru, and at no point is there any disclosure, or even suggestion that this user repository database also has images. Dr. Johnson points to Figure 7 of Bandaru, which I have reproduced here:

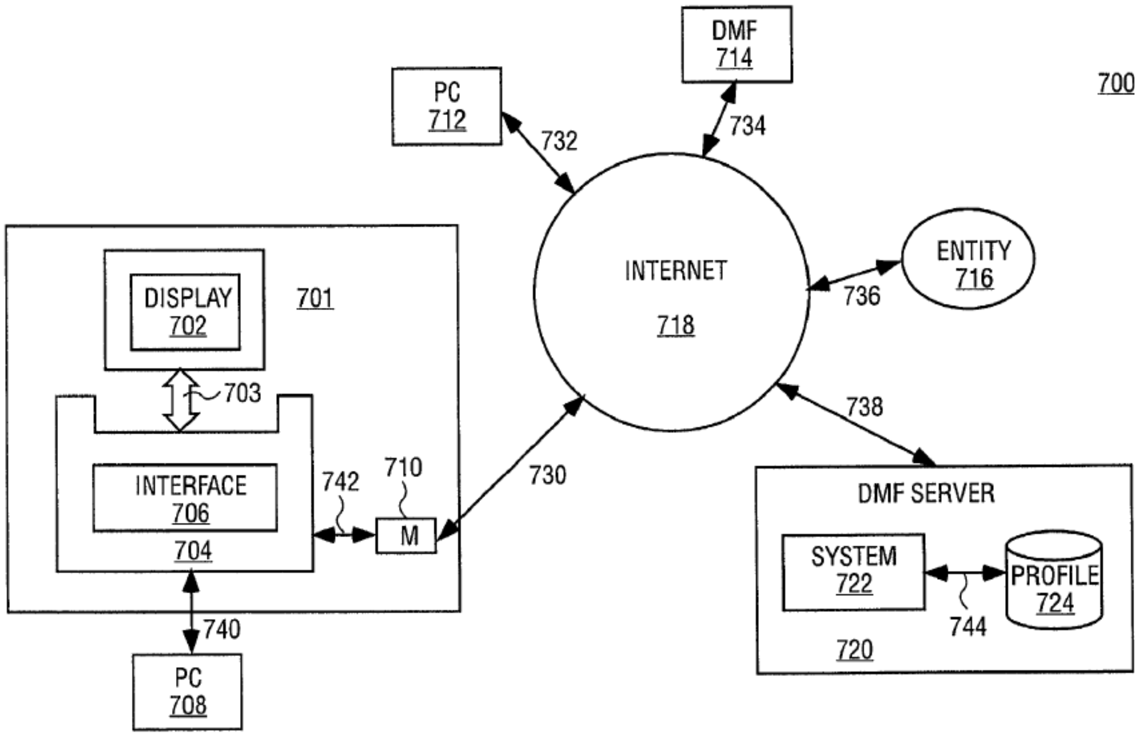


FIG. 7

951. Neither the user profile database 724, the DMF server 720, or the System 722, are disclosed to provide images. Rather, Bandaru merely discloses that users can use a DMF network service provided by the DMF server 720, and that the DMF network service can be used to "subscribe" to "categories of images," or to "commercially available websites" to receive "stock market news, sports, and weather channels." Bandaru at 10:39-65. The user profile database 724 merely stores user profiles that reflect the selected categories. Bandaru at 10:52-56.

952. Bandaru discloses the following regarding the DMF server 720:

> DMF server 720 is a network server that provides DMF network service for DMF devices connected to the network. In one embodiment, DMF server includes a system 722 and a user profile database 724. DMF network service provides user and data services, which can be used to configure DMF. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists

multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:39-57.

953. Thus, at most, the DMF server lists categories of images the user can subscribe to, but there is no disclosure or even a suggestion that these images are stored on the DMF server or in the user profile database, or that the DMF receives images from the DMF server.

954. Rather, Bandaru discusses receiving image data in figure 5, shown here:

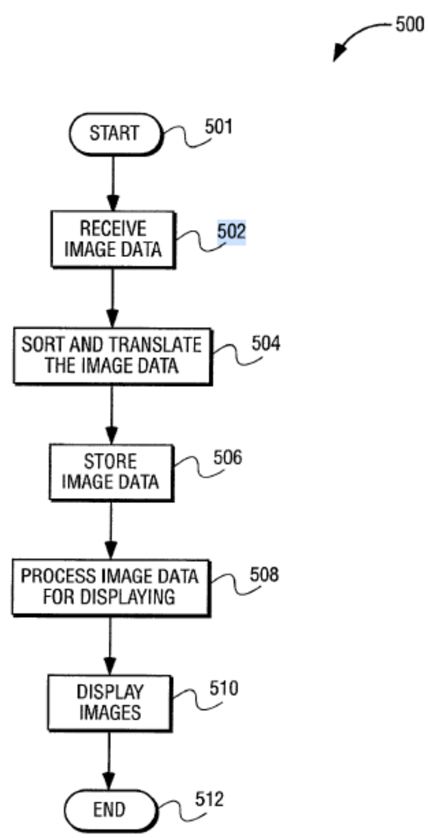


FIG. 5

955. Bandaru explicitly states: "The process proceeds to block 502, where an interface unit of the DMF 400 receives the image data. The image data may be captured by image capturing devices, such as a digital or video camera." Bandaru at 8:1-4. Bandaru mentions that the DMF is "capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. However, Bandaru does not disclose that the DMF server or the user profile database provide the images. Rather, Bandaru merely states that images can be received from an "Internet node," (i.e., some Internet connected source like a website that provides the website content) and that images received by the DMF can have an Internet address associated with the image that "indicates which Internet node was used for sending the image data to the DMF 102," including an "Internet address [that] links to other websites that are related to the image." Bandaru at 3:1-4. But when referring to the DMF server and user profile database specifically, Bandaru merely discloses that the DMF server and user profile database are used to "configure" the DMF by allowing a user to subscribe to image "categories" or websites. Bandaru at 10:6-11:2

956. Bandaru does not disclose an image repository from which the DMF receives images, and thus Dr. Johnson's statement that the DMF meets the "definition" of frame device in the '573 Patent is incorrect.

957. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

ii. Claim [1.b] configured to operate according to preferences defined by a user

958. Dr. Johnson asserts that use of the "user input device" in Bandaru to pause or move forward or backward in displaying images corresponds to this claim limitation. Johnson ¶¶522-23.

However, this assertion ignores the description of the user input device in Bandaru, as well as the user preferences disclosed by the ’573 Patent.

959. Bandaru is clear on what the user input device can do. As one example, Bandaru states:

> The user-input device 410 contains a reverse button 420, a pause button 422, and a fast forward button 424. The reverse button 420 allows a user to view previously displayed images, while the fast forward button 424 allows a user to view next sequential images. The pause button 422 causes a currently displaying image to freeze until a release command is issued by a Subsequent activation of the pause button 422.

Bandaru at 7:51-58.

960. The ’573 Patent first decries the inadequacy of prior art to function according to preferences set by a user: “Additionally, the receiver cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences.” ’573 Patent at 4:4-6. The ’573 Patent then describes how preferences set by a user are a benefit in the current invention, stating: “Each frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences. For example, a frame device may dynamically obtain image data from a networked data source (e.g., a client computer), store that data, and then display that data according to criteria established by an authorized user.” ’573 Patent at 8:38-41.

961. The ’573 Patent provides additional details on the preferences established by a user:

> For example, data about each user and the preferences associated with that user may be held in the data repository. Each frame device is configured to connect to the data repository at one or more predefined intervals utilizing an interconnection fabric such as the Internet. Once a frame device connects to the data repository, it utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device. For example, the functions provided by the onboard Software may be modified when the behavior characteristics are updated. The data repository is therefore responsible for queuing and archiving image data and/or software data for each frame device associated with the data repository.

’573 Patent at 19:11-25.

962. A POSITA would notice several things about the ’573 Patent preferences established by a user. First, these preferences can be stored in a database (“data about each user and the preferences associated with that user may be held in the data repository”). Second, the frame device automatically configures to execute according to preferences established by a user (“Each frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences”).

963. In Bandaru, nothing is displayed according to preferences set by a user. Rather, once images are stored on the digital media frame (DMF), the user may simply navigate through the images manually using the input device (buttons 420, 422, 424). This is not only clear from the text of Bandaru quoted above, but also from Figure 4 of Bandaru:

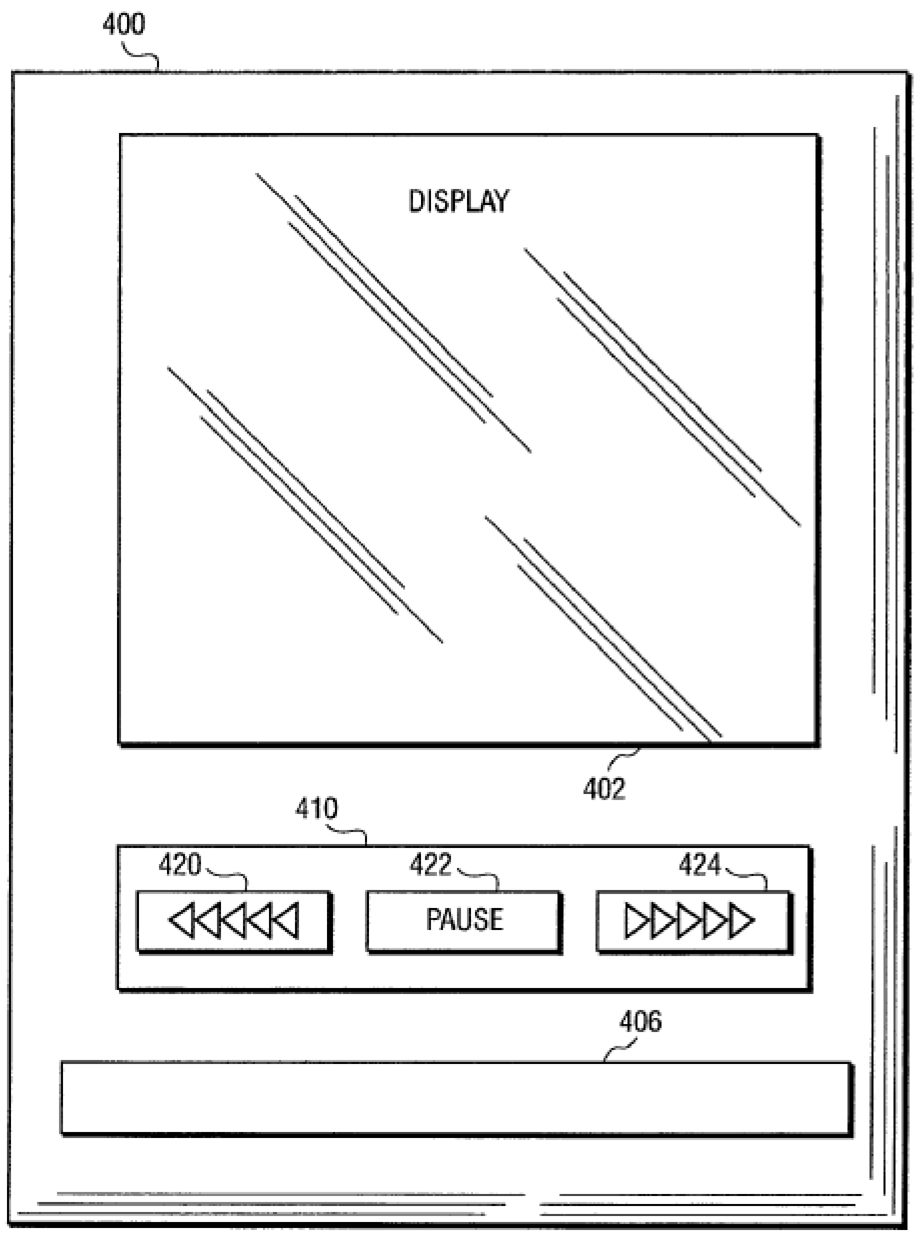


FIG. 4

964. Dr. Johnson attempts to conflate the above-described user input device of Bandaru with completely separate passages from Bandaru describing operations taken by a computer providing images to the DMF. First, Dr. Johnson cites the following from Bandaru:

> Upon receipt of image data, the computer 112 may perform some functions before the computer 112 passes the image data to the DMF 102. The function may involve reordering the sequences of the images to be displayed, or converting one type of image data format to another type of image data format, and so on.

Johnson ¶522 (citing Bandaru at 3:45-51).

965. Then, in the same sentence, Dr. Johnson states Bandaru discloses "providing the 'user certain controls to manage how images should be displayed.'" Johnson ¶522 (citing Bandaru at 4:40-50). But this section of Bandaru at 4:40-50 simply describes the various physical inputs devices of the DMF, such as the above described "push button" shown in FIG. 4 of Bandaru.

966. Dr. Johnson appears to be attempting to merge Bandaru at 3:45-51 with Bandaru at 4:40-50. This is an error. A POSITA reading Bandaru would immediately see that, at 3:45-51, Bandaru is describing what the computer will do when providing images to the DMF, and does not disclose or even suggest a user being involved, or that a user can provide any settings or preferences. Then, several paragraphs later, Bandaru at 4:40-50 describes the simple buttons in Bandaru as shown in FIG. 4, which merely let a user pause or move forward or backward between images stored on the DMF.

967. Thus, what Dr. Johnson describes as an "image display sequence defined by the user," Johnson ¶523, a POSITA would recognize as simply a user controlling a device manually using forward, reverse, and pause buttons. These portions of Bandaru relied upon by Dr. Johnson do not disclose, or even suggest, storing preferences established by the user, or automatically configuring the display according to said preferences.

968. Dr. Johnson then turns his attention to the web page for the DMF in Bandaru. Specifically, Dr. Johnson states: "For example, Bandaru discloses a user web interface provided by a DMF network server that enables the user to configure the user's DMF device, select DMF

network services for the DMF device, and select images and/or subscribe to image categories for delivery to, and display by, the DMF device." Johnson ¶524.

969. I note that Bandaru describes a "DMF web page." I would next note that Bandaru provides a rather thorough description of what the DMF web page does:

> In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:44-56.

970. At most, what Bandaru is disclosing is a web page that lets a user subscribe to categories of images. These images can include commercially available websites, including stock market news pages sports, and weather channels. These will not display images in a sequence established by the user as disclosed in the '573 Patent. Rather, this allows Bandaru's DMF to function as a web browser and the user can receive information from certain web pages via the browser. Bandaru at 10:63-65 (stating the DMF 710 can access the web site).

971. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iii. Claim [1.f] a user interface . . . configured to obtain image data and said preferences from said user [1.g] and provide said image data and said preferences to said at least one server system

972. This element of claim 1, in its entirety, recites "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at

least one frame device and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system."

973. Dr. Johnson states that Bandaru's DMF web page is a user interface coupled to a server system and separable from the DMF device of Bandaru because the DMF web page is provided by DMF network services managed by the server 720, and because the DMF web page can be accessed by another device besides the DMF devices, such as a PC. Johnson ¶¶535-36, 539-41, 589-92.

974. However, Bandaru does not disclose or suggest that the DMF website of Bandaru is configured to obtain image data and preferences from a user, nor that the DMF website provides image data and preferences received from the user to at least one server system.

975. Dr. Johnson refers to a passage in column 13 of Bandaru that describes use of the DMF website, which states "DMF window allows a user to add an image to [the] DMF by moving the corresponding icon or thumbnail from the global storage (one portion of the screen) to the DMF storage (another portion of screen)." Johnson ¶545 (citing Bandaru at 13:41-51). Dr. Johnson then asserts that "the image data may be provided by an input device, such as a camera or a PC, or from a database of the DMF server." Johnson ¶545. The section of Bandaru that Dr. Johnson cites as allegedly disclosing receiving images "from a database of the DMF server" (Dr. Johnson's words) does not even state such. As shown below, the cited portion of Bandaru (3:11-14) simply states that the DMF can include an "internet connector" and does not mention the DMF server. Thus, Dr. Johnson incorrectly attempts to assert that Bandaru discloses (when it actually does not) that the DMF web page obtains images from users and passes those images to the DMF server for storage.

976. To support his claim, Dr. Johnson cites portions of Bandaru from column 3 and 11, and to column 14, which state:

- "FIG. 1 illustrates an embodiment of a connection between DMF and external input devices 100. The connection includes a DMF 102, a camera 110, a personal computer ("PC") 112, a cable connector 114, and an Internet connector 116," Bandaru at 3:11-14;
- "Information mode 804 displays informational data, such as stock trading news. Picture mode 850 displays a sequence of pictorial images that are previously received and stored in the memory. Information mode 804 further contains a graphical representation portion 806 and a textural representation portion 808. Graphical representation portion 806 displays pictorial images while textual representation portion 808 displays text or letters. Graphical representation portion 806 can be further split into photos portion 810 and video portion 812. The photo portion 810 includes still pictorial images and video portion 812 contains motion images. Photo portion 810 can be further divided into private block 814 and public block 816. Private block 814 refers to individual photos, for example, an individual creates a photograph for private use," Bandaru at 11:12-24; and
- "means for allowing selection of images from the database to be forwarded to said remote color display device." Bandaru at 14:8-10 (claim 1).

977. All of the above quotations from Bandaru relate to with how the digital media *frame* of Bandaru receives images; they do not show that the DMF web page can receive images from users, or provide such images to a server for storage. In fact, the portion of claim 1 of Bandaru that Dr. Johnson cites, in context, does not disclose that images are stored in the database. Rather, claim 1 of Bandaru merely recites that the database is a "database of image references."

978. There is ***no*** disclosure in Bandaru that the DMF web page is used to obtain image data and preferences from users and provide image data and preferences to the DMF server. Rather, Bandaru only describes that images are shown as thumbnails in the DMF web page, and Bandaru lacks any description of how the DMF server obtains these images. Particularly, Bandaru describes that the DMF website shows a user two portions of a screen: (1) "DMF window allocates a portion of screen identified as DMF storage and uses icons or thumbnails to list image files stored in DMF

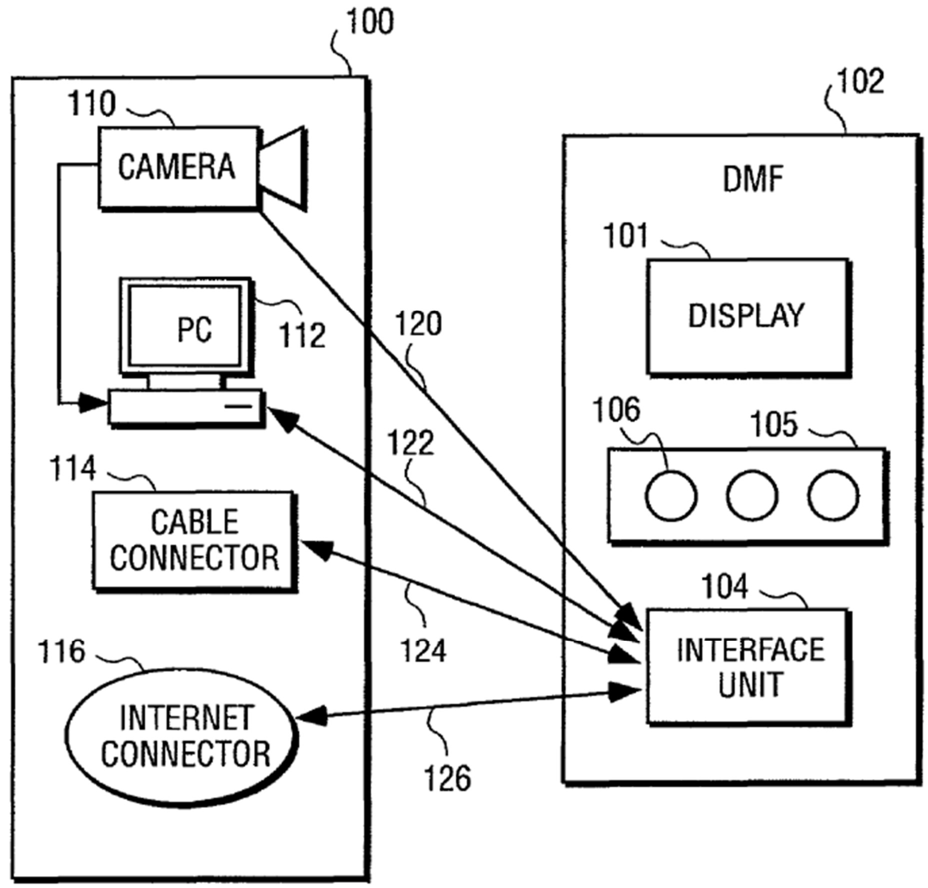
under the DMF storage"; and (2) "a second portion of screen identified as global storage where various image files are listed using icons or thumbnails." Bandaru at 13:32-40. A user can use the DMF web page to "add an image to DMF by moving the corresponding icon or thumbnail from the global storage (one portion of screen) to the DMF storage (another portion of screen)" or "delete an image from DMF by removing the corresponding icon or thumbnail from the DMF storage." Bandaru at 13:41-50.

979. Bandaru thus merely discloses that the server website allows a user to associate or disassociate images with a DMF device using the DMF web page. However, there is no disclosure in Bandaru that a user can use the DMF web page to provide new images to the DMF web page, nor that the DMF web page can forward new images received for storage on the DMF server. The only description for how images can be acquired cited by Johnson (Johnson ¶547-549) states:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion. The computer 112, which may be a PC, a workstation, a mini-computer, or a mainframe computer, or a processor based system, receives image data from other devices, such as scanners, Internet servers, or cameras 110. Upon receipt of image data, the computer 112 may perform some functions before the computer 112 passes the image data to the DMF 102 [DMF 102 is the DMF frame device; not the DMF server]. The function may involve reordering the sequence of the images to be displayed, or converting one type of image data format to another type of image data format, and so on.

Bandaru at 3:42-51.

980. As shown above, this portion of Bandaru relied upon by Dr. Johnson merely discloses that images can be obtained by devices from a camera 110 connected to a computer 112 local to the digital media frame device, and the computer 112 in turn provides the images to the digital media frame device, as shown in FIG. 1 below.



981. Therefore, this passage of Bandaru cited by Dr. Johnson does not support his position that Bandaru's DMF web page can obtain images from users. Rather, there is no disclosure in Bandaru that the DMF website includes functionality for users to upload new images to the server. Additionally, Bandaru discloses that a user need not even use the DMF server website. Rather, the user can alternatively configure a digital media frame device by calling on the telephone, "a DMF network service provider to verbally convey to a DMF network service representative a new user DMF configuration." Bandaru at 10:61-11:1. Clearly, new images cannot be provided by a user to the DMF server verbally over the telephone.

982. Since Bandaru includes no disclosure or suggestion that the DMF web page obtains image data from a user, then it logically follows that the DMF web page also cannot provide *said* image data to a server system, as recited in Claim 1.

983. Dr. Johnson appears to take the position that, in Bandaru, subscribing to categories using the DMF web page and storing selected subscriptions in a user profile discloses providing said image data to said at least one server system. However, again, the section of Bandaru that Dr. Johnson cites does not support his view. The section is provided here: "In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF." Bandaru 10:46-55.

984. But it does not follow that storing "subscribed to" image categories or websites means that image data is received a user is stored by a server system. Subscription data is not image data as a POSITA would understand it from the claims of the '573 Patent. Dr. Johnson appears to recognize this issue, and states that "to the extent image data obtained from the user is not stored within the user profile database residing within the DMF server system, such image data is relayed to the DMF via the DMF server system" apparently because "[t]he image data is provided to the DMF server system for such transmission to the DMF." Johnson ¶560. Here, it seems Dr. Johnson is attempting to take the position that, even though Bandaru does not disclose where images shown in the DMF web page come from or where they are stored, the image data

must be provided to the DMF web page because images can be sent to digital media frame devices from the DMF server. But Bandaru does not suggest that images must come from users. Rather, like the website content users can subscribe to, it appears that Bandaru considers that images come from other sources.

985. Therefore, at best, Bandaru describes a user interface (DMF web page) that allows a user to associate or disassociate images with a digital media frame (DMF) or subscribe to categories via an associated user profile, but does not disclose that a user interface that *obtains image data* from said user, and *provides said image data* to said at least one server system, as required by Claim 1 of the '573 Patent.

986. For at least the reasons discussed in this section, Bandaru does not anticipate or render obvious this claim limitation.

iv. Claim [1.i] wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data.

987. For this claim limitation, it appears that Dr. Johnson has simply ignored the "periodically relay" and "automatically issues a request for said image data" claim limitations.

988. Dr. Johnson, in paragraph 568 of his report states:

> Moreover, Bandaru discloses that after the user uses the PC to request DMF network service, "DMF network service 1058 provides services directly to DMF 1052 after it receives the request." *Id.* at 12:22-24; see also *id.* at 4:1-17 (describing capture and transfer of image data from Internet servers to DMF in FIG. 2).

Johnson ¶568.

989. First, Dr. Johnson is taking this language out of context. The "request" described at 12:22-24 of Bandaru is initiated by a user:

- "To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service

1058."; "To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service 1058." Bandaru at 12:3-5.

- "Once DMF network service 1058 is initiated, it allows the user to use the services." Bandaru at 12:7-9; and Bandaru at 12:7-9.
- "PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050." Bandaru at 12:21-26.

990. As shown above, the "request" pointed to by Dr. Johnson is not automatic nor made by a frame device, but is initiated manually by a user and via PC 1050. Bandaru's process is neither automatic nor periodic. It is done manually when the user sends a request.

991. Dr. Johnson goes on to point to various elements of Bandaru he believes are requests for images. But none of the portions he cites are automatic, nor do they happen periodically. Rather, they are manual. It should also be noted that the word "automatic" does not appear in Bandaru. Neither do the words "periodic" or "periodically" appear in Bandaru.

992. Bandaru does not explain exactly how a DMF receives images associated with the DMF. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication" or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other functionality of the two-way program is described. Bandaru merely describes that images are "forwarded" from a device such as a PC to the DMF:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a

> computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion.

Bandaru at 3:31-41.

993. Similarly, the claims of Bandaru only describe that images are "forwarded," "transmitted," or "provided to" the DMF. Bandaru simply does not disclose an automatic and periodic request/response communication protocol as recited in the '573 Patent.

994. Dr. Johnson appears to admit this in paragraph 573 of his report when he asserts: "To the extent Bandaru does not expressly disclose that the user's preferences and image data are periodically relayed by the DMF server system to the DMF, it is my opinion that it would have been obvious to a POSITA for the DMF server system to periodically relay such images and preferences to the DMF as periodic updates for advertisements, weather, stock trading news, headline news, daily news summaries, and interactive online gambling and consistent with the subscribed image data categories."

995. However, most of the information Dr. Johnson points to in Bandaru is merely textual information, including weather, stocks, headlines, interactive gambling (part of the interactive section 826), Bandaru at 11:34-40, and advertisements, are, as shown in FIG. 8 of Bandaru, below, textual (i.e., not images) information provided as part of textural representation 808. This is made even more clear in figure 8 of Bandaru:

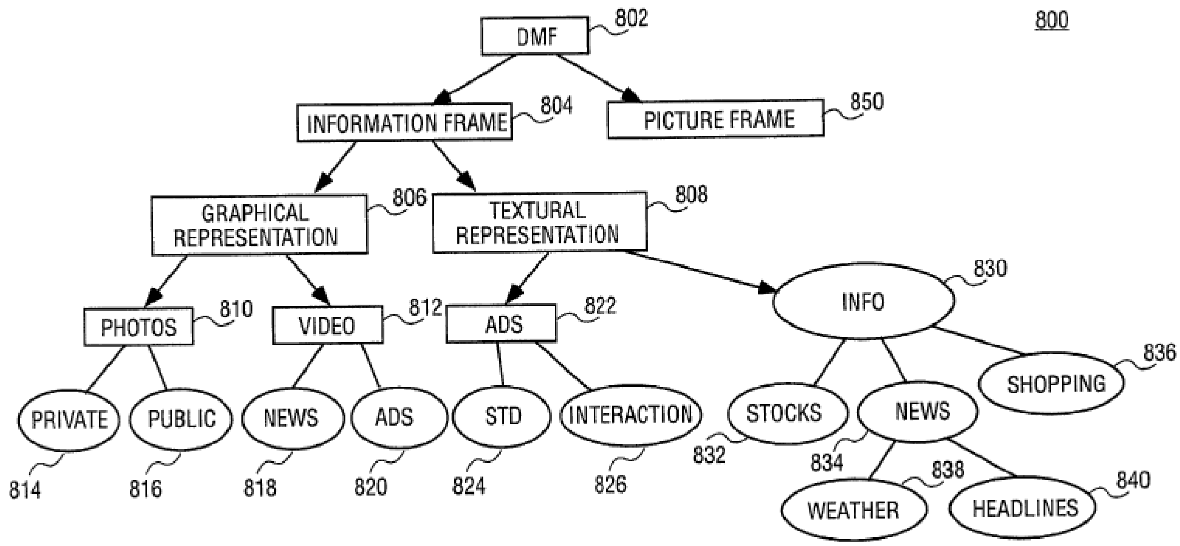


FIG. 8

996. Dr. Johnson is conflating information from 830 with pictures from 850.

997. The modes are described as: “While in the pictorial mode of DMF displays a sequence of predefined pictures, the information mode of DMP displays a set of information or data such as news, financial data, and the like.” Bandaru at 9:50-53. (Note DMP is in Bandaru, but I assume this is a typo and should read DMF).(Note: DMP is in Bandaru, but I assume this is a typo and should read DMF).

998. Bandaru goes on to further describe a financial mode: “Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, such categories can include news, sports, entertainment, financial data, et cetera.” Bandaru at 9:63-65.

999. Also, Bandaru simply does not disclose any periodic or automatic relay of images. Even if one agrees with Dr. Johnson that relaying of information such as “advertisements, weather,

stock trading news, headline news, daily news summaries, and interactive gambling" would be periodic, there is no description in Bandaru of how the transmission of such data would occur, given Bandaru is silent regarding any periodic or automatic relay of any data. This claim element requires that the periodic relay of data is in response to a request, and, given Bandaru does not disclose anything regarding periodic or automatic relay of images, there is no suggestion of any request being made by the DMF. Data can be transmitted in various ways, such as a server push. Bandaru simply does not disclose or suggest the specific claim language of this claim element.

1000. Immediately after indicating that Bandaru does not disclose periodic transmissions, Dr. Johnson then makes a rather puzzling statement: "Bandaru further discloses that the DMF server system periodically relays said image data and said preferences to said at least one frame device when said at least one frame device issues a request for said image data." Johnson ¶574. Note that Dr. Johnson left out "automatically" issues a request from this statement, which is explicitly required in the claim of the '573 Patent. As I have explained, in Bandaru, the request is manual and not automatic.

1001. Dr. Johnson then refers to the portion of Bandaru, again, regarding the different devices that can communicate with the DMF services: "In one embodiment, a user may use the telephone 1054 to initiate DMF network service 1058. Once DMF network service 1058 is initiated, it allows the user to use the services, such as reconfiguration of DMF. For example, when DMF 1052 needs to be reconfigured, DMF network services 1058 supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052. It should be noted that communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:6-11.

1002. Dr. Johnson also points to Bandaru at 12:15-20. Johnson ¶608. That excerpt from Bandaru states: "In another embodiment, a request for DMF network Service 1058 from DMF 1052 can be initiated via a direct connection. A direct connection is a cable or a modem that is directly connected between DNS 1059 and DMF 1052. The Internet 1056 can be an alternative connection between DNS 1059 and DMF 1052."

1003. Nothing in that section discloses, or even suggests anything occurring automatically. Aside from the fact that the terms "automatic" and "automatically" do not appear anywhere in Bandaru, a POSITA would understand that Bandaru actually teaches away from such automatic activity.

1004. The term "modem" is one that a POSITA would be very familiar with, and in fact most lay persons would be familiar with. Modems are not even always connected. One initiates a connection for a particular period of time, then ends that connection. Without an automatic initiation of communication, one could not have any automatic transmission.

1005. Again, a user utilizing a telephone or web page to manually conduct some activity is neither *periodic* nor *automatic*. Furthermore, Bandaru is again quite clear on the type of connection he contemplated "Network-communicating device 710 may be a modem or a cordless modem, such as a cellular modem. In one embodiment, network-communicating device 710 is a one-way transmitting device, such as a pager type of one-way communication device. In another embodiment, network-communicating device 710 is a two-way communicating device, which may facilitate an interactive communication between devices. In one embodiment, DMF 701 uses a cellular modem to communicate with PC 712, DMF 714, and entity 716 or DMF Server 720." Bandaru at 10:20-29.

1006. As shown above, Bandaru even contemplates a cellular modem. Bandaru was issued on December 26, 2006, and filed on October 16, 2001. Anyone using a cellular device in that time frame would know that one had to pay for every minute of usage. Doing anything automatically or periodically would use up time and increase the cost of the cellular plan. It is therefore unsurprising that Bandaru does not disclose doing anything automatically or periodically.

1007. Dr. Johnson then refers to a portion of Bandaru disclosing that a user can add an image to the DMF by moving the corresponding icon or thumbnail from a global storage to the DMF storage. Johnson ¶576. A POSITA would again understand that this is an entirely manual process; it does not involve *periodically* relaying image data in response to a frame device *automatically* issuing a requests.

1008. Dr. Johnson then, rather inexplicably, discusses a DMF doing some level of configuration automatically. Again, I first note that the term "automatic" does not appear in Bandaru. Setting that to one side, at most, what Dr. Johnson is pointing to is about configuring the DMF device, not about relaying image data.

1009. Dr. Johnson attempts to bolster his assertion stating: "For example, as discussed above, it would have been obvious for the DMF to automatically issue a request for image data corresponding to a subscription installment to the DMF network service (e.g., according to a client pull model), in accordance with periodic time intervals specified by the subscription." Johnson ¶578.

1010. The term "subscription installment" does not appear in Bandaru. In *one* place, Bandaru states that a user can subscribe to categories of images. Bandaru at 10:44-50. Bandaru also does not disclose a "client pull model." Nothing in the description in Bandaru discloses or

suggests periodically or automatically relaying images to the DMF. Rather, Bandaru simply discloses that one can have specific categories of images one is interested in.

1011. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that a DMF can "synchronize with the DMF network on a periodic basis" to upload "to the DMF network objects that were loaded into the DMF from the external devices" and to download "to the DMF objects that . . . have not been sent to the DMF." Bandaru II at 16:33-60. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate the DMF and server performing periodic and automatic connections/communications to receive images. This feature was apparently never contemplated by Bandaru until after the Patents-in-Suit.

1012. For at least the reasons discussed in this section, Bandaru does not anticipate or render obvious this claim limitation.

v. Claim [6.] The system of claim 1 wherein input to said user interface is permitted when said user is authenticated by said at least one server system.

1013. As discussed later in relation to claim 2m, a POSITA would first note that the words "authenticate" and "authentication" do not appear anywhere in Bandaru. Furthermore, no related terms appear in Bandaru such as "password," "security," "confidential," or "login." This is a strong indicator that these technologies were not even envisioned by Bandaru.

1014. Dr. Johnson, with respect to Claim 6, asserts that Bandaru can be combined with Elgamal or RFC 2246 to provide authentication. Johnson ¶676. But, according to the list of combinations Dr. Johnson advances in his report, Bandaru is only being combined with Nishiyama for Claim 6, and thus any discussion regarding Elgamal or RFC 2246 appears irrelevant to the

analysis regarding Claim 6. Johnson ¶478. But, to the extent Dr. Johnson is advancing some combination of Bandaru and Elgamal or RFC 2246 with respect to Claim 6, Elgamal or RFC 2246 do not provide the claimed authentication for the same reasons I discuss with respect to Claim 2 of the ’573 Patent.

1015. As with claim 2m, Dr. Johnson conflates “private use” with private photos. Dr. Johnson points repeatedly to Bandaru’s discussing a photo for “private use” to infer a need for authentication and security in Bandaru. Bandaru 11:21-24. However, Bandaru does not disclose what this means. There are only two sentences in Bandaru devoted to this topic: “Photo portion 810 can be further divided into private block 814 and public block 816. Private block 814 refers to individual photos, for example, an individual creates a photograph for private use.” Bandaru at 11:21-24. However, Figure 8 of Bandaru does elucidate this issue:

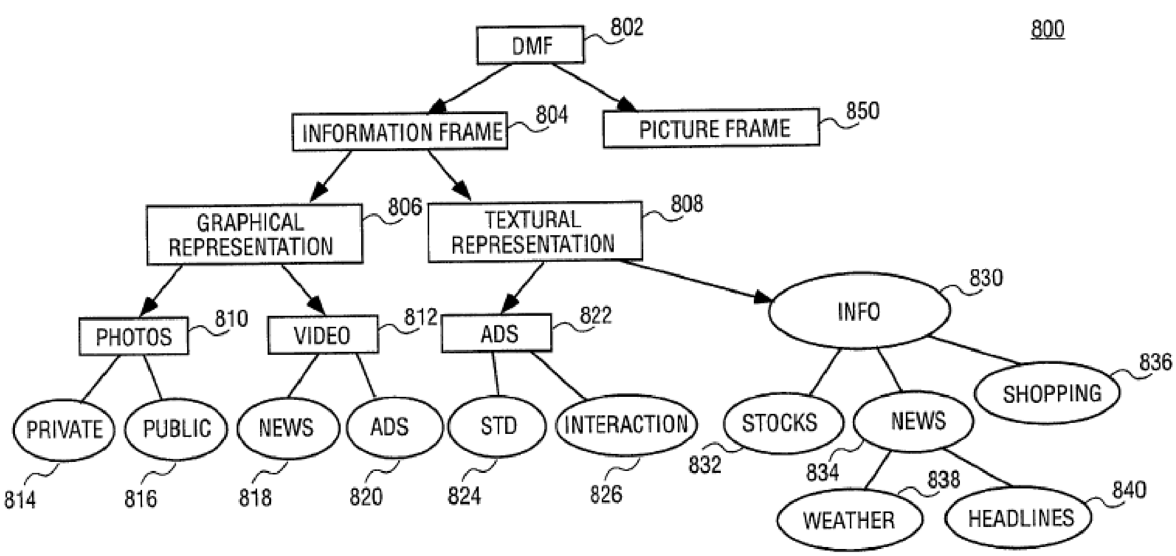


FIG. 8

1016. A POSITA would immediately see that block 814 is related to the photos 810 which are part of the graphical representation 806 of the information frame 804. A POSITA would see that this is referring to information that happens to contain a photo and setting aside that photo for private use. This is not referring to the user's private photos or even to the picture frame 850.

1017. Unlike claim 2m, for this claim, Dr. Johnson suggests combining Nishiyama with Bandaru, Johnson ¶679, but that Bandaru and Nishiyama are in entirely different fields and are non-analogous art. The USPTO primary classification for Bandaru is 715/748. Class 715[95] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[96] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

1018. Nishiyama is not in the same field of endeavor as the Patents-in-Suit because Nishiyama is directed to providing video advertisements to public displays/billboards, whereas the Patents-in-Suit are in the field of consumer digital picture frames. Additionally, I understand that, for a reference outside an inventor's field of endeavor to still be analogous art, the reference must be reasonably pertinent., which means the reference must logically commend itself to an inventor's attention in considering his problem.

1019. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, and that existing client-server transmission techniques, such as client pull and server push techniques, were

95 https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

96 https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

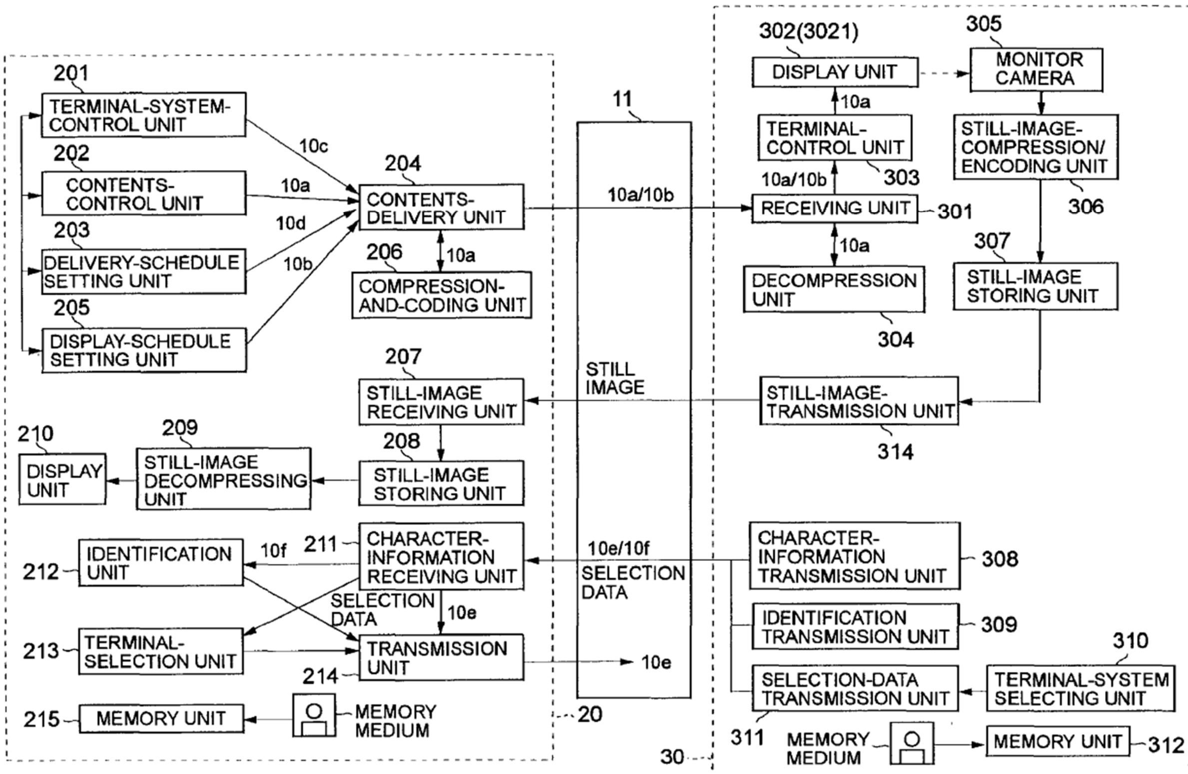
inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '930 Patent 2:20-27, 5:10-33, 6:12-21. Nishiyama does not address these problems, as Nishiyama is primarily concerned with providing video advertisements for display on digital billboards according to a schedule to reduce the duration of transmissions and to avoid transmitting during heavy load times. Nishiyama at 4:31-45, 13:40-61.

1020. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regards to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." Johnson ¶18. The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama.

1021. Additionally, Dr. Johnson ignores the fact that Nishiyama does not even contain the word "authenticate," "login," or "security." Instead, Dr. Johnson relies on the identification unit 212 of Nishiyama. Dr. Johnson specifically cites Nishiyama at 17:45-47, which states: "This unit is implemented via the microcomputer of the server PC, a DSU, and a TA. The identification unit 212 identify the terminal systems 30 and users based on the received identification data 10f, and is implemented via the microcomputer of the server PC." However, Nishiyama does not disclose what the identification data is. Further, Nishiyama describes that "the transmission unit

214 serves a function to transmit the received character information l0e to the selected terminal systems 30 only when valid identifications are obtained." Nishiyama at 17:54-57. This is illustrated in FIG. 15 of Nishiyama:

FIG.15



1022. Essentially, Nishiyama discloses that character information 10e (text) can be superimposed on videos. Terminals can provide the character information 10e to the server 20 and identification information 10f is sent along with the character information 10e to be checked by the identification unit 212 before transmission.

> The terminal systems 30 and the center system 20 can implement a superimposing function to display both the character information 10 e and the moving-picture-advertisement-contents-MPEG2 data 10 a on the large-scale plasma display 3021. To this end, each of the terminal systems 30 further includes a character-information-transmission unit 308, an identification-transmission unit 309, and a terminal-system selecting unit 310. As shown in the figures, the character-information-transmission unit 308 serves to generate and transmit the character information 10 e, and is implemented by the microcomputer of the client PC, the

> DSU, and the TA. As shown in the figures, the identification-transmission unit 309 serves a function to transmit the identification data 10 f of the terminal and the identification data 10 f of the user, and the microprocessor of the client PC, the DSU, and the TA are used for this purpose. The terminal-system selecting unit 310 as shown in the figures is provided with a function to generate selection data for selecting the terminal systems 30 with an aim of having the character information 10 e displayed on the large-scale plasma display 3021 of the selected terminal systems 30. This function is implemented by the microprocessor of the client PC. The selection-data transmission unit 311 serves to transmit the selection data, and is implemented by the microprocessor of the client PC, the DSU, and the TA. In this manner, authorized users using authorized terminal systems 30 can make the character information 10 e displayed on the large-scale plasma display 3021, or can select the terminal systems 30 for making the selected terminal systems 30 display the character information 10 e on the display unit 302 thereof.

Nishiyama at 21:21-51.

Nishiyama 21:21-51.

1023. Thus, access to a separable user interface is not what is at issue in Nishiyama, but whether information already received by the server is processed and resent to the terminals (the billboards). And, as I explained with respect to Bandaru, Bandaru also does not disclose a separable user interface as claimed.

1024. Dr. Johnson is piling assumption on top of assumption. To posit a combination of Nishiyama and Bandaru to meet this claim limitation, one must ignore that Nishiyama and Bandaru are in disparate fields, that a POSITA, as defined by Dr. Johnson, would not have been skilled in Nishiyama, and that Nishiyama does not actually disclose authentication. Rather, one must assume that the identification data in Nishiyama provides authentication for a separable user interface.

1025. For at least the reasons described in this section, Bandaru and Nishiyama do not anticipate or render obvious this claim limitation.

2. Claim 2 of the ’573 Patent is not invalid in view of Bandaru in combination with one of Elgamal or RFC 2246

i. Claim [2.a] at least one frame device

1026. For this claim limitation in Claim 2, Dr. Johnson simply refers back to his analysis regarding claim element [1a]. In reference to that claim limitation, Dr. Johnson claims the DMF of Bandaru meets what he alleges to be a definition of a frame device in the ’573 Patent at 6:35-39. Johnson ¶513. That section of the ’573 Patent states: “The present invention comprises one or more interconnected frame devices. A frame device is a self-configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric (e.g., a computer network).” *See* ’573 Patent at 6:34-39.

1027. I first note that, to show a repository, Dr. Johnson points to a user profile database in Bandaru, stating “the DMF is connected via an interconnection fabric (i.e., Johnson points to a user profile database in Bandaru, stating: “the DMF is connected via an interconnection fabric (i.e., Internet 718) to the DMF server 720, which includes a repository (i.e., user profile database 724), from which it obtains images for display.” Johnson ¶518. However, in the very section of the ’573 Patent that Dr. Johnson refers to, the repository of the ’573 Patent is quite clearly not a user profile database, but rather an image repository from which the frame device “obtains images for display.”

1028. The user profile database 724 is mentioned only 5 times in Bandaru, and at no point is there any disclosure, or even suggestion that this user repository database also has images. Dr. Johnson points to Figure 7 of Bandaru, which I have reproduced here:

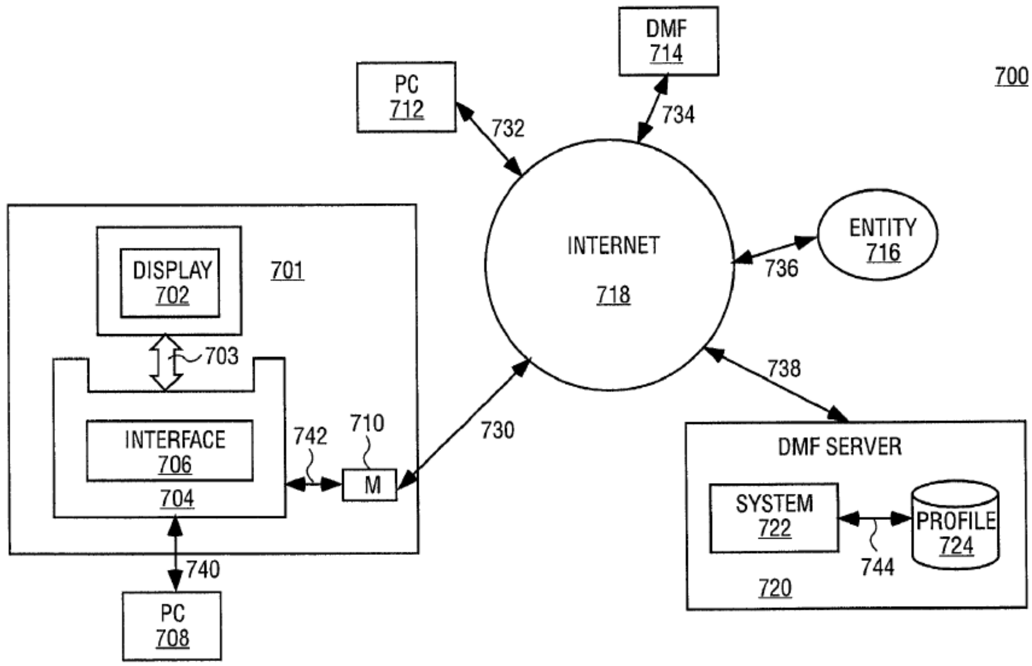


FIG. 7

1029. Neither the user profile database 724, the DMF server 720, or the System 722, are disclosed to provide images. Rather, Bandaru merely discloses that users can use a DMF network service provided by the DMF server 720, and that the DMF network service can be used to "subscribe" to "categories of images," or to "commercially available websites" to receive "stock market news, sports, and weather channels." Bandaru at 10:39-65. The user profile database 724 merely stores user profiles that reflect the selected categories. Bandaru at 10:52-56.

1030. Bandaru specifically discloses the following regarding the DMF server 720:

> DMF server 720 is a network server that provides DMF network service for DMF devices connected to the network. In one embodiment, DMF server includes a system 722 and a user profile database 724. DMF network service provides user and data services, which can be used to configure DMF. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select

> listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:39-57.

1031. Thus, at most, the DMF server lists categories of images the user can subscribe to, but there is no disclosure or even a suggestion that these images are stored on the DMF server or in the user profile database, or that the DMF receives images from the DMF server.

1032. Rather, Bandaru discusses receiving image data in figure 5, shown here:

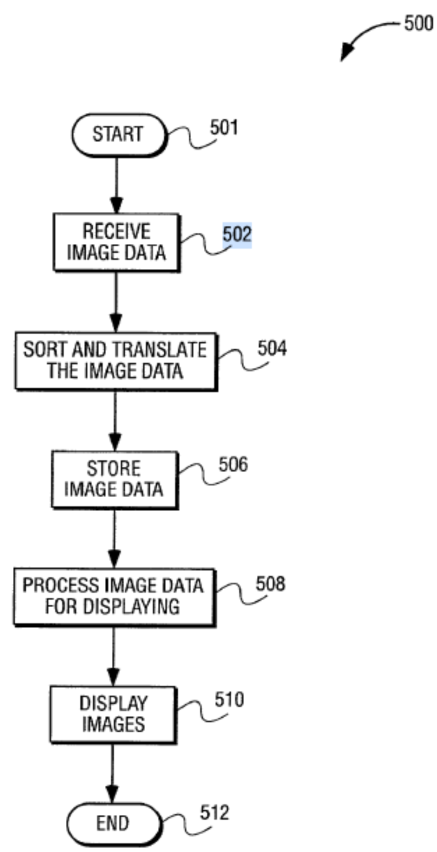


FIG. 5

1033. Bandaru explicitly states: "The process proceeds to block 502, where an interface unit of the DMF 400 receives the image data. The image data may be captured by image capturing devices, such as a digital or video camera." Bandaru at 8:1-4. Bandaru mentions that the DMF is "capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. However, Bandaru does not disclose that the DMF server or the user profile database provide the images. Rather, Bandaru merely states that images can be received from an "Internet node," (i.e., some Internet connected source like a website that provides the website content) and that images received by the DMF can have an Internet address associated with the image that "indicates which Internet node was used for sending the image data to the DMF 102," including an "Internet address [that] links to other websites that are related to the image." Bandaru at 3:59-61, 4:18-34. But when referring to the DMF server and user profile database specifically, Bandaru merely discloses that the DMF server and user profile database are used to "configure" the DMF by allowing a user to subscribe to image "categories" or websites. Bandaru at 10:6-11:2.

1034. Bandaru thus does not disclose an image repository from which the DMF receives images, and thus Dr. Johnson's statement that the DMF meets the "definition" of frame device in the '573 Patent is incorrect.

1035. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

ii. Claim [2.b] configured to operate according to preferences comprising an image display list defined by a user,

1036. Dr. Johnson first refers back to claim element [1.b] for his discussion on "operate according to user preferences." In this prior section concerning claim 1, Dr. Johnson first asserts

that use of the "user input device" in Bandaru to pause or move forward or backward in displaying images corresponds to this claim limitation. Johnson ¶¶522-523. However, this assertion ignores the description of the user input device in Bandaru, as well as the user preferences disclosed by the '573 Patent.

1037. Bandaru is clear on what the user input device can do. As one example, Bandaru states:

> "The user-input device 410 contains a reverse button 420, a pause button 422, and a fast forward button 424. The reverse button 420 allows a user to view previously dis played images, while the fast forward button 424 allows a user to view next sequential images. The pause button 422 causes a currently displaying image to freeze until a release command is issued by a Subsequent activation of the pause button 422."

Bandaru at 7:51-58.

1038. The '573 Patent decries the inadequacy of prior art to function according to preferences set by a user: "Additionally, the receiver cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences." '573 Patent at 4:4-6. The '573 Patent then describes how preferences set by a user are a benefit in the current invention, stating: "Each frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences. For example, a frame device may dynamically obtain image data from a networked data source (e.g., a client computer), store that data, and then display that data according to criteria established by an authorized user." '573 Patent at 8:38-41.

1039. The '573 Patent provides additional details on the preferences established by a user:

> "For example, data about each user and the preferences associated with that user may be held in the data repository. Each frame device is configured to connect to the data repository at one or more predefined intervals utilizing an interconnection fabric such as the Internet. Once a frame device connects to the data repository, it utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device. For

> example, the functions provided by the onboard Software may be modified when the behavior characteristics are updated. The data repository is therefore responsible for queuing and archiving image data and/or software data for each frame device associated with the data repository"

'573 Patent at 19:11-25.

1040. A POSITA would notice several things about the '573 Patent preferences established by a user. First, these preferences can be stored in a database ("data about each user and the preferences associated with that user may be held in the data repository"). Second, the frame device automatically configures to execute according to preferences established by a user ("Each frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences").

1041. In Bandaru, nothing is displayed according to preferences set by a user. Rather, once images are stored on the digital media frame (DMF), the user may simply navigate through the images manually using the input device (buttons 420, 422, 424). This is not only clear from the text of Bandaru quoted above, but also from Figure 4 of Bandaru:

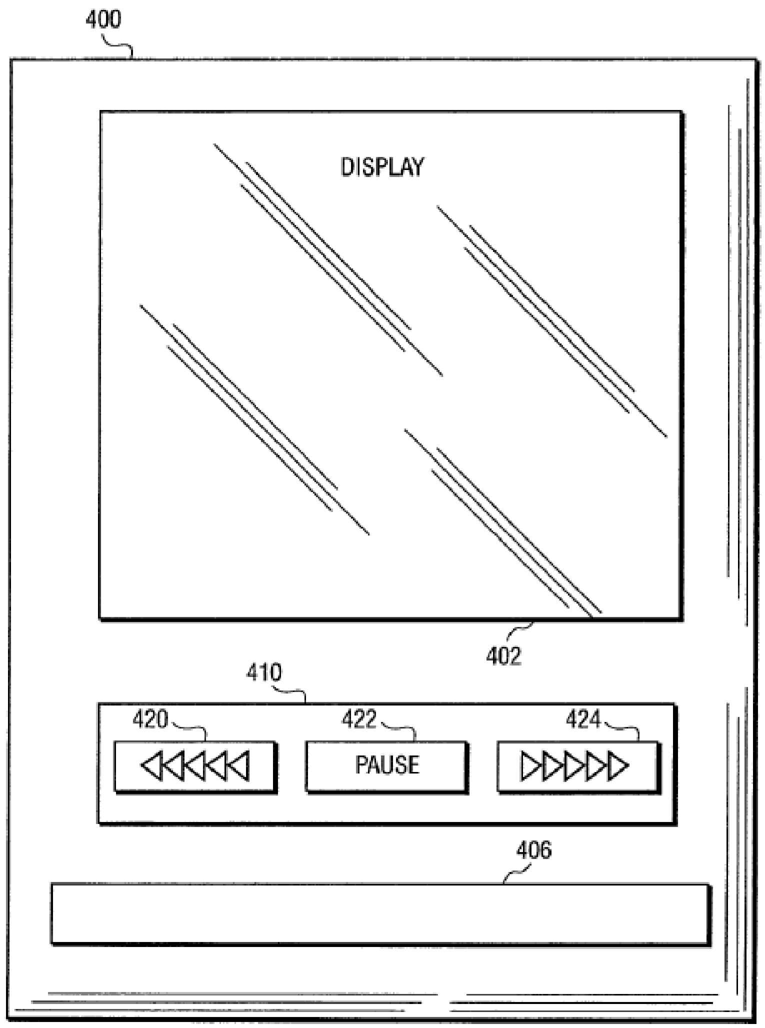


FIG. 4

1042. Dr. Johnson attempts to conflate the above-described user input device of Bandaru with completely separate passages from Bandaru describing operations taken by a computer providing images to the DMF. First, Dr. Johnson cites the following from Bandaru:

> Upon receipt of image data, the computer 112 may perform some functions before the computer 112 passes the image data to the DMF 102. The function may involve reordering the sequences of the images to be displayed, or converting one type of image data format to another type of image data format, and so on.

Johnson ¶522 (citing Bandaru at 3:45-51).

Bandaru at 3:45-51.

1043. Then, in the same sentence, Dr. Johnson states Bandaru discloses "providing the 'user certain controls to manage how images should be displayed.'" Johnson ¶522 (citing Bandaru at 4:40-50). But this section of Bandaru at 4:40-50 simply describes the various physical inputs devices of the DMF, such as the above described "push button" shown in FIG. 4 of Bandaru.

1044. Dr. Johnson appears to be attempting to merge Bandaru at 3:45-51 with Bandaru at 4:40-50. This is an error. A POSITA reading Bandaru would immediately see that, at 3:45-51, Bandaru is describing what the computer will do when providing images to the DMF, and does not disclose or even suggest a user being involved, or that a user can provide any settings or preferences. Then, several paragraphs later, Bandaru at 4:40-50 describes the simple buttons in Bandaru as shown in FIG. 4, which merely let a user pause or move forward or backward between images stored on the DMF.

1045. Thus, what Dr. Johnson describes as an "image display sequence defined by the user," Johnson ¶523, a POSITA would recognize as simply a user controlling a device manually using forward, reverse, and pause buttons. These portions of Bandaru relied upon by Dr. Johnson do not disclose, or even suggest, storing preferences established by the user or automatically configuring the display according to said preferences.

1046. Dr. Johnson then turns his attention to the web page for the DMF in Bandaru. Specifically, Dr. Johnson states: "For example, Bandaru discloses a user web interface provided by a DMF network server that enables the user to configure the user's DMF device, select DMF network services for the DMF device, and select images and/or subscribe to image categories for delivery to, and display by, the DMF device." Johnson ¶524.

1047. I note that Bandaru describes a "DMF web page." I would next note that Bandaru provides a rather thorough description of what the DMF web page does:

1048. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF." Bandaru at 10:44-56.

1049. At most, what Bandaru is disclosing is a web page that lets a user subscribe to categories of images. These images can include commercially available websites, including stock market news pages sports, and weather channels. These will not display images in a sequence established by the user as disclosed in the '573 Patent. Rather, this allows Bandaru's DMF to function as a web browser and the user can receive information from certain web pages via the browser. Bandaru at 10:63-65 (stating the DMF 710 can access the web site).

1050. Then, with respect to this element of Claim 2 regarding "an image display list defined by a user," Dr. Johnson again refers to the web page in Bandaru that allows a user to subscribe to categories of images. Johnson ¶¶583-585. The very section of Bandaru that Dr. Johnson cites belies his interpretation of it:

> DMF network service provides user and data services, which can be used to configure DMF. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user

> can subscribe to. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selected the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:43-54.

1051. Dr. Johnson seems to assume that subscribing to a category is synonymous with downloading images, and that a list of categories somehow corresponds to an image display list on a frame device. However, a POSITA reviewing Johnson would easily see that is not the case.

1052. A POSITA would first look to how Bandaru describes receiving an image to determine if this is according to user preferences. The following excerpts from Bandaru are informative:

a. "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4.

b. "The interface unit 104 is further capable of receiving and processing both digital and analog image data. It will be apparent to one of ordinary skill in the art that one or more of these external input devices may be connected to a particular DMF 102." Bandaru at 3:22-26.

c. "The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, Such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, Subsequently, transfers the image data to the DMP 102." Bandaru at 3:30-38.

d. "The computer 112, which may be a PC, a workstation, a mini-computer, or a mainframe computer, or a processor based system, receives image data from other devices. Such as, Scanners, Internet servers, or cameras 110. Upon receipt of image data, the computer 112 may perform some functions before the computer 112 passes the image data to the DMF 102. The function may involve

reordering the sequence of the images to be displayed, or converting one type of image data format to another type of image data format, and so on." Bandaru at 3:42-51.

e. "The Internet connector 116 is another external input device 100 that enables the DMF 102 to receive the image data directly from an Internet node." Bandaru at 3:58-61.

1053. A POSITA would recognize that user preferences are not involved in any of the above processes. The only time the user has any control over the images is when they are being displayed, such that the user can choose to control the speed of display, pause, and execute similar actions: "In one embodiment, block 214 gives a user certain controls to manage how images should be displayed. Block 214 can be any conventional input device. Such as, a push button, a screen input device, remote control input device, or a sound activated input device (including speech recognition input-output device)." Bandaru at 4:40-47. This does not disclose user preference comprising an image display list, but only that a user can directly control the display device via inputs.

1054. Dr. Johnson also asserts that subscribing to the image categories and websites somehow discloses an image display list: "The image categories and commercially available websites, including, but not limited to, stock market news, sports, and weather channels, to which the user can subscribe, comprise 'an image display list defined by the user.' See '573 Patent at 2:20-25." Johnson ¶ 584.

1055. It is not clear what relevance the entire paragraph Dr. Johnson cites from the '573 Patent has to this claim limitation. The paragraph in its entirety is:

> A problem with prior art mechanisms, such as the one illustrated in FIG. 1a, is that the user must physically provide storage media 103 to the device. Thus, a person who does not have physical access to the device cannot introduce new images into the device. Moreover, the device cannot be controlled from a remote location. For example, making changes to a website cannot control the behavior of the control mechanism.

’573 Patent at 2:15-23.

1056. This section of the ’573 Patent is describing that prior devices could not be controlled remotely. Nothing in this is relevant to an image display list defined by the user. And, again, subscribing to website content does not amount to “an image display list defined by a user.”

1057. Dr. Johnson states: “For example, a POSITA would have found it obvious for user-selected categories and/or websites from ‘listed categories or web s[it]es’ to be in the form of a list defined by the user, that specifies the images to be displayed by the frame device. Bandaru at 10:50-55.” Johnson ¶584.

1058. However, again, the section of the Bandaru that Dr. Johnson cites does not support his view. The section is provided here: “Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.” Bandaru at 10:50-55.

1059. A POSITA would immediately recognize that nothing in this excerpt discusses displaying any images. For example, subscribing to website content does not allow a user to choose what images the DMF will receive. Rather, the DMF will receive whatever is provided by the website on its own initiative. Even if one were to view this passage in a light most favorable to Dr. Johnson’s interpretation, it would cause confusion. Assuming that the categories will be displayed, does that mean that every image in the category is displayed? If so, in what sequence? Furthermore, if there are multiple categories what order will the categories be displayed? A POSITA would recognize that Bandaru is simply stating that this information would be available to a DMF if the website were so configured. Furthermore, a POSITA would recognize that these categories are

part of the information mode of Bandaru, not the pictorial mode. Bandaru at 9:50-53, 9:63-67, 10:1-5, 11:8-14.

1060. Dr. Johnson then cites Bandaru at 3:42-49 which state "reordering the sequence of the images to be displayed." However, this is again taken out of context. This is not in any way related to the categories Dr. Johnson is discussing, nor to user preferences/selections, but rather is related to a process that is controlled by the computer 112 when images are provided by a computer 112 to the DMF. Note that this quotation comes from column 3 of Bandaru, and the categories come from column 10.

1061. What Dr. Johnson does here, as well as in other parts of his report, is to cobble together disparate portions of Bandaru and present them as if they are connected. A POSITA would understand this and further understand that Bandaru does not disclose this claim limitation.

1062. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iii. Claim [2.f] a user interface . . . configured to obtain image data and said preferences from said user [2.g] and provide said image data and said preferences to said at least one server system

1063. This element of claim 2, in its entirety, recites "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system."

1064. Dr. Johnson states that Bandaru's DMF web page is a user interface coupled to a server system and separable from the DMF device of Bandaru because the DMF web page is provided by DMF network services managed by the server 720, and because the DMF web page

can be accessed by another device besides the DMF devices, such as a PC. Johnson ¶¶535-536, 539-541, 589-592.

1065. However, Bandaru does not disclose or suggest that the DMF website of Bandaru is configured to obtain image data and preferences from a user, nor that the DMF website provides image data and preferences received from the user to at least one server system.

1066. Dr. Johnson first refers to a portion in column 13 of Bandaru that describes use of the DMF website, which states "DMF window allows a user to add an image to [the] DMF by moving the corresponding icon or thumbnail from the global storage (one portion of the screen) to the DMF storage (another portion of screen.)" Johnson ¶545 (citing Bandaru at 13:41-51). Dr. Johnson then asserts that "the image data may be provided by an input device, such as a camera or a PC, or from a database of the DMF server." Johnson ¶545. The section of Bandaru that Dr. Johnson cites as allegedly disclosing receiving images "from a database of the DMF server" (Dr. Johnson's words) does not even state such. As shown below, the cited portion of Bandaru (3:11-14) simply states that the DMF can include an "internet connector" and does not mention the DMF server. Thus, Dr. Johnson falsely attempts to assert that Bandaru discloses (when it actually does not) that the DMF web page obtains images from users and passes those images to the DMF server for storage.

1067. To attempt to support his claim, Dr. Johnson jumps back to portions of Bandaru from column 3 and 11, and forward to column 14, which state:

- "FIG. 1 illustrates an embodiment of a connection between DMF and external input devices 100. The connection includes a DMF 102, a camera 110, a personal computer ("PC") 112, a cable connector 114, and an Internet connector 116." Bandaru at 3:11-14.
- "Information mode 804 displays informational data, such as stock trading news. Picture mode 850 displays a sequence of pictorial images that are previously received and stored in the memory. Information mode 804

> further contains a graphical representation portion 806 and a textural representation portion 808. Graphical representation portion 806 displays pictorial images while textual representation portion 808 displays text or letters. Graphical representation portion 806 can be further split into photos portion 810 and video portion 812. The photo portion 810 includes still pictorial images and video portion 812 contains motion images. Photo portion 810 can be further divided into private block 814 and public block 816. Private block 814 refers to individual photos, for example, an individual creates a photograph for private use." Bandaru at 11:12-24.

- "means for allowing selection of images from the database to be forwarded to said remote color display device." Bandaru at 14:8-10 (claim 1).

1068. All of the above quotations from Bandaru have to do with how the digital media *frame* of Bandaru receives images, not that the DMF web page can receive images from users or provide such images to a server for storage. In fact, the portion of claim 1 of Bandaru that Dr. Johnson cites, in context, does not disclose that images are stored in the database. Rather, claim 1 of Bandaru merely recites that the database is a "database of image references."

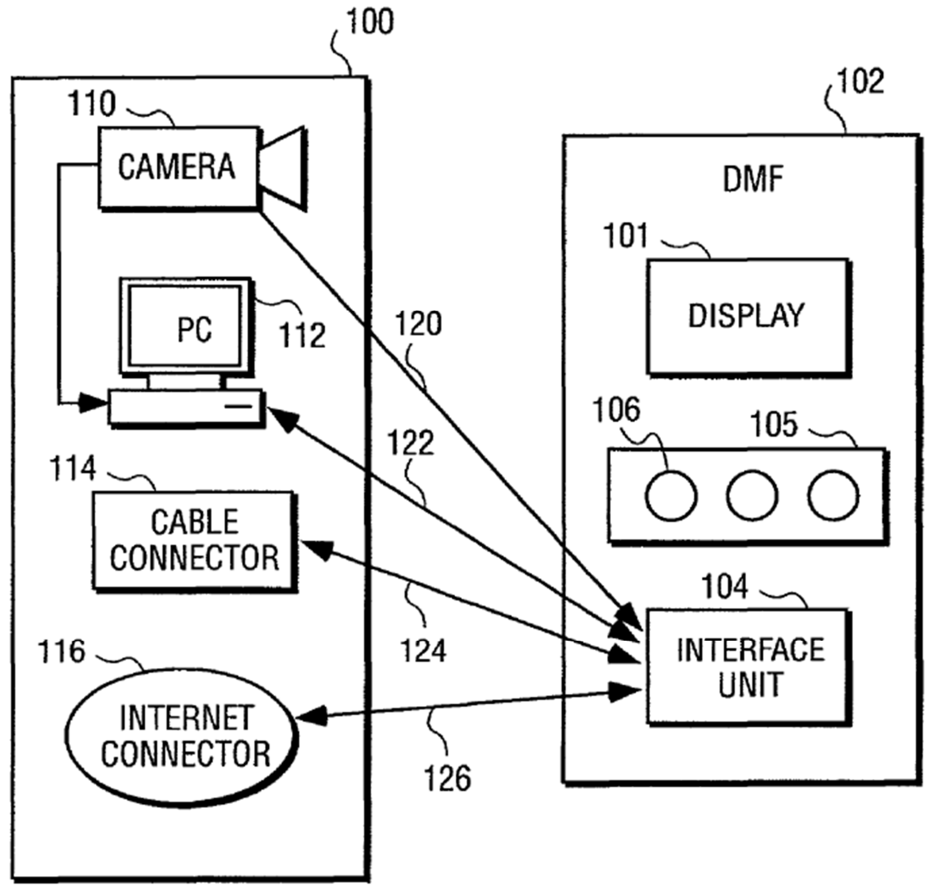
1069. There is ***no*** disclosure in Bandaru that the DMF web page is used to obtain image data and preferences from users and provide image data and preferences to the DMF server. Rather, Bandaru only describes that images are shown as thumbnails in the DMF web page, and Bandaru lacks any description of how the DMF server obtains these images. Particularly, Bandaru describes the DMF website shows a user two portions of a screen: (1) "DMF window allocates a portion of screen identified as DMF storage and uses icons or thumbnails to list image files stored in DMF under the DMF storage"; and (2) "a second portion of screen identified as global storage where various image files are listed using icons or thumbnails." Bandaru at 13:32-40. A user can use the DMF web page to "add an image to DMF by moving the corresponding icon or thumbnail from the global storage (one portion of screen) to the DMF storage (another portion of screen)" or "delete an image from DMF by removing the corresponding icon or thumbnail from the DMF storage." Bandaru at 13:41-50.

1070. Bandaru thus merely discloses that the server website allows a user to associate or disassociate images with a DMF device using the DMF web page. However, there is no disclosure in Bandaru that a user can use the DMF web page to provide new images to the DMF web page, nor that the DMF web page can forward new images received for storage on the DMF server. The only description for how images can be acquired cited by Johnson (Johnson ¶ ¶547-549) states:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion. The computer 112, which may be a PC, a workstation, a mini-computer, or a mainframe computer, or a processor based system, receives image data from other devices, such as, scanners, Internet servers, or cameras 110. Upon receipt of image data, the computer 112 may perform some functions before the computer 112 passes the image data to the DMF 102 **[DMF 102 is the DMF frame device; not the DMF server]**. The function may involve reordering the sequence of the images to be displayed, or converting one type of image data format to another type of image data format, and so on.

Bandaru at 3:42-51.

1071. As shown above, this portion of Bandaru relied upon by Dr. Johnson merely discloses that images can be obtained by devices from a camera 110 connected to a computer 112 local to the digital media frame device, and the computer 112 in turn provides the images to the digital media frame device, as shown in FIG. 1 below.



1072. Therefore, this passage of Bandaru cited by Dr. Johnson does not support his position that Bandaru's DMF web page can obtain images from users. Rather, there is no disclosure in Bandaru that the DMF website includes functionality for users to upload new images to the server. Additionally, Bandaru discloses that a user need not even use the DMF server website, but can alternatively configure a digital media frame device by calling a "a DMF network service provider to verbally convey to a DMF network service representative a new user DMF configuration." Bandaru at 10:61-11:1. Clearly, new images cannot be provided by a user to the DMF server verbally over the telephone.

1073. Since Bandaru includes no disclosure or suggestion that the DMF web page obtains image data from a user, then it logically follows that the DMF web page also cannot provide *said* image data to a server system, as recited in Claim 2.

1074. Dr. Johnson appears to take the position that, in Bandaru, subscribing to categories using the DMF web page and storing selected subscriptions in a user profile discloses providing said image data to said at least one server system. However, again, the section of the Bandaru that Dr. Johnson cites does not support his view. The section is provided here: "In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF." Bandaru at 10:46-55.

1075. But it does not follow that storing "subscribed to" image categories or websites means that image data is received a user is stored by a server system. Subscription data is not image data as a POSITA would understand it from the claims of the '573 Patent. Dr. Johnson appears to recognize this issue, and states that "to the extent image data obtained from the user is not stored within the user profile database residing within the DMF server system, such image data is relayed to the DMF via the DMF server system" apparently because "[t]he image data is provided to the DMF server system for such transmission to the DMF." Johnson ¶560. Here, it seems Dr. Johnson is attempting to take the position that, even though Bandaru does not disclose where images shown in the DMF web page come from or where they are stored, the image data

must be provided to the DMF web page because images can be sent to digital media frame devices from the DMF server. But Bandaru does not suggest that images must come from users. Rather, like the website content users can subscribe to, it appears that Bandaru considers that images come from other sources.

1076. Therefore, at best, Bandaru describes a user interface (DMF web page) that allows a user to associate or disassociate images with a digital media frame (DMF) or subscribe to categories via an associated user profile, but does not disclose that a user interface that *obtains image data* from said user, and *provides said image data* to said at least one server system, as required by Claim 2 of the ’573 Patent.

1077. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iv. Claim [2.i] wherein said at least one server system is configured to generate package data comprising said image data and said preferences

1078. For this claim element, Dr. Johnson again refers to the DMF web page and the ability to select the categories and websites. Johnson ¶597. However, nothing in the sections of Bandaru that Dr. Johnson cites show the server in Bandaru providing packages with image data.

1079. Dr. Johnson asserts: “a POSITA would have understood that the user profile managed by the DMF server includes image data of the images added by the user…” because the user profile in Bandaru “stores the selected categories or websites.” Johnson ¶¶597-598. However, as I have explained regarding the other claim elements, nothing in Bandaru suggests that the user profile would contain image data; Bandaru only discloses that the DMF server and user profile store *selected categories or websites*, Bandaru at 10:51-60, that is, merely “references” and not actual images. Bandaru at 14:6-7 (claim 1). The term “user profile” appears 16 times in Bandaru. Bandaru refers to a user profile database, Bandaru at 10:42-43, 10:58-64, 12:1-5, user profile

storing categories, Bandaru at 10:52-56, user profile being related to a menu. Bandaru at 13:18-23. But none of these portions of Bandaru disclose, or even suggest, that the user profile contains any actual image data.

1080. Bandaru specifically states: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059, server 1050, or server 1062. To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through DMF network service 1058." Bandaru at 12:1-5. A POSITA would immediately recognize that if the user profiles can be physically located on a DNS server, they would not contain image data. This becomes clear when one considers what a DNS server does.

1081. The Lab notes for Rice University Comp 321: Introduction to Computer Systems, state:

> IP addresses are difficult for humans to remember, so the Domain Name System (DNS) is used to provide a mapping between easy to remember textual domain names (sometimes simply called hostnames) and IP addresses. A domain name consists a hierarchical sequence of textual labels that are separated by dots, with the right-most label identifying the top-level domain for the name. For example, rice.edu, cs.rice.edu, and www.cs.rice.edu are all examples of different domain names that belong to the edu top-level domain. The name rice.edu refers to the rice subdomain of edu, the name cs.rice.edu refers to the cs subdomain of rice.edu, and the name www.cs.rice.edu refers to the www subdomain of cs.rice.edu. Other top-level domain names include com, org, and net.[97]

1082. Every time one visits a web page, or sends an email, the DNS server must be consulted in order to retrieve the IP address of the target server. This means that DNS servers tend to get a very large amount of traffic. Storing image data on such a server would be a serious mistake as it would take up substantial storage space on the server, and would unduly tax traffic to the

[97] https://www.clear.rice.edu/comp321/html/laboratories/lab11/

server. If, however, a user profile is just some information about a user, and does not contain image data, then storing the profile on a DNS server would not be contraindicated.

1083. Not only does Bandaru not disclose the user profile including image data, but a POSITA would understand that attempting to include image data with the user profile would render some embodiments of Bandaru untenable. My analysis here also applies to the other claim elements regarding "a user interface . . . configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system," as, again, Bandaru does not disclose storing actual image data on its DMF server.

1084. While Dr. Johnson repeats the assertion that the user profile in Bandaru contains image data, Johnson ¶¶598-599, Bandaru does not actually disclose the user profile containing image data.

1085. There are standard internet servers from which a user can *retrieve* images. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1086. A POSITA would readily understand that there is no way for Bandaru's DMF server to cause various internet servers to generate package data comprising said image data and said preferences.

1087. A POSITA would further understand that the DMF server of Bandaru stores user profiles, but does not store images. I note that Dr. Johnson does not cite any part of Bandaru that discloses images being on the DMF server.

1088. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

v. Claim [2.j] and to periodically relay said package data comprising said image data and said preferences to said at least one frame device [2.k] when and in response to said at least one frame device automatically initiating communication with said server system and [2.l] said at least one frame device issuing a request for a current one of said package data comprising said image data and said preferences

1089. Although Dr. Johnson breaks these elements up in his report, in my opinion, the full context of the claim element matters. As I described above, Bandaru does not disclose or suggest "at least one server system is configured to generate package data comprising said image data and said preferences." Bandaru thus also cannot disclose or suggest "and to periodically relay said package data comprising said image data and said preferences to said at least one frame device."

1090. According to my analysis, a POSITA would also readily understand that there is no way for Bandaru's DMF server to generate package data comprising said image data and said preferences, much less cause various internet servers to periodically send images.

1091. Further, Dr. Johnson appears to simply ignore the "periodically relay," "automatically initiating communication," and "issuing a request" claim limitations.

1092. Dr. Johnson states:

> When a user reconfigures, or initially configures, the user's corresponding DMF via the DMF network service web interface, the DMF network service creates the package data (user profile) containing the image data and user preferences defining the configuration. See Bandaru at 10:40-11:1. A POSITA would also have understood that the DMF network service relays the package data within the user

> profile containing image data and user preferences to the DMF device as information needed to complete the transaction of reconfiguring the user's DMF, e.g., where the DMF uses information contained within the user profile to configure its display. See Bandaru at 9:60-10:5, 10:6-29, 10:30-39, 10:40-11:1, 12:6-28, 13:16-23; 13:41-51, FIGS. 5-13.

Johnson ¶603.

1093. What is noticeably absent from Dr. Johnson's report, and from Bandaru, is any indication that any of this occurs *periodically* or *automatically*.

1094. Dr. Johnson also refers back to his report regarding claim 1, where, in paragraph 568 of his report, he states:

> Moreover, Bandaru discloses that after the user uses the PC to request DMF network service, "DMF network service 1058 provides services directly to DMF 1052 after it receives the request." *Id.* at 12:22-24; see also *id.* at 4:1-17 (describing capture and transfer of image data from Internet servers to DMF in FIG. 2).

Johnson ¶568.

1095. First, Dr. Johnson is taking this language out of context. The "request" described at 12:22-24 of Bandaru is initiated by a user:

- "To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service 1058." Bandaru at 12:3-5.
- "Once DMF network service 1058 is initiated, it allows the user to use the services." Bandaru at 12:7-9.
- "PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050." Bandaru at 12:21-26.

1096. As shown above, the "request" pointed to by Dr. Johnson is not automatic nor made by a frame device, but is initiated manually by a user and via PC 1050. Bandaru's process is neither automatic nor periodic. It is done manually when the user sends a request.

1097. Dr. Johnson goes on to point to various elements of Bandaru he believes are requests for images. But none of the portions he cites are automatic, nor do they happen periodically. Rather, they are manual. It should also be noted that the word "automatic" does not appear in Bandaru. Neither do the words "periodic" or "periodically" appear in Bandaru.

1098. Bandaru does not explain exactly how a DMF receives images associated with the DMF. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other functionality of the two-way program is described. Bandaru merely describes that images are "forwarded" from a device such as a PC to the DMF:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion.

Bandaru at 3:31-41.

1099. Similarly, the claims of Bandaru only describe that images are "forwarded," "transmitted," or "provided to" the DMF. Bandaru simply does not disclose an automatic and periodic request/response communication protocol as recited in the '573 Patent.

1100. Dr. Johnson appears to admit this in paragraph 573 of his report when he asserts: "To the extent Bandaru does not expressly disclose that the user's preferences and image data are periodically relayed by the DMF server system to the DMF, it is my opinion that it would have been obvious to a POSITA for the DMF server system to periodically relay such images and preferences to the DMF as periodic updates for advertisements, weather, stock trading news,

headline news, daily news summaries, and interactive online gambling and consistent with the subscribed image data categories."

1101. However, most of the information Dr. Johnson points to in Bandaru is merely textual information, including weather, stocks, headlines, interactive gambling (part of the interactive section 826), Bandaru at 11:34-40, and advertisements, are, as shown in FIG. 8 of Bandaru, below, textual (i.e., not images) information provided as part of textural representation 808. This is made even more clear in figure 8 of Bandaru:

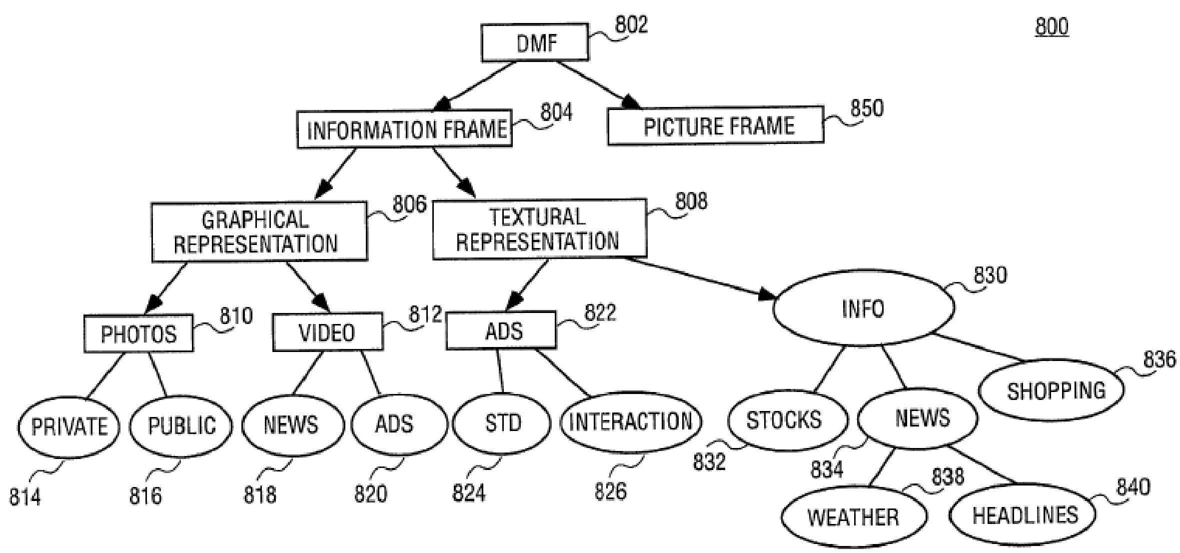


FIG. 8

1102. Dr. Johnson is conflating information from 830 with pictures from 850.

1103. The modes are described as: "While in the pictorial mode of DMF displays a sequence of predefined pictures, the information mode of DMP displays a set of information or data such as news, financial data, and the like." Bandaru at 9:50-53. (Note: DMP is in Bandaru, but I assume this is a typo and should read DMF).

1104. Bandaru goes on to further describe a financial mode: "Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, such categories can include news, sports, entertainment, financial data, et cetera." Bandaru at 9:63-65.

1105. Also, Bandaru simply does not disclose any periodic or automatic relay of images. Even if one agrees with Dr. Johnson that relaying of information such as "advertisements, weather, stock trading news, headline news, daily news summaries, and interactive gambling" would be periodic, there is no description in Bandaru of how the transmission of such data would occur, given Bandaru is silent regarding any periodic or automatic relay of any data. This claim element requires that the periodic relay of data is in response to a request, and, given Bandaru does not disclose anything regarding periodic or automatic relay of images, there is no suggestion of any request being made by the DMF. Data can be transmitted in various ways, such as a server push. Bandaru simply does not disclose or suggest the specific claim language of this claim element.

1106. Dr. Johnson then refers to the portion of Bandaru, again, regarding the different devices that can communicate with the DMF services: "In one embodiment, a user may use the telephone 1054 to initiate DMF network service 1058. Once DMF network service 1058 is initiated, it allows the user to use the services, such as reconfiguration of DMF. For example, when DMF 1052 needs to be reconfigured, DMF network services 1058 supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052. It should be noted that communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:6-11.

1107. Dr. Johnson also points to Bandaru at 12:15-20. Johnson ¶608. That excerpt from Bandaru states: "In another embodiment, a request for DMF network Service 1058 from DMF

1052 can be initiated via a direct connection. A direct connection is a cable or a modem that is directly connected between DNS 1059 and DMF 1052. The Internet 1056 can be an alternative connection between DNS 1059 and DMF 1052."

1108. Nothing in that section discloses, or even suggests anything occurring automatically. Aside from the fact that the terms "automatic" and "automatically" do not appear anywhere in Bandaru, a POSITA would understand that Bandaru actually teaches away from such automatic activity. The processes in Bandaru are manual.

1109. The term "modem" is one that a POSITA would be very familiar with, and in fact most lay persons would be familiar with. Modems are not even always connected. One initiates a connection for a particular period of time, then ends that connection. Without an automatic initiation of communication, one could not have any automatic transmission.

1110. Again, a user utilizing a telephone or web page to manually conduct some activity is neither *periodic* nor *automatic*. Furthermore, Bandaru is again quite clear on the type of connection he contemplated: "Network-communicating device 710 may be a modem or a cordless modem, such as a cellular modem. In one embodiment, network-communicating device 710 is a one-way transmitting device, such as a pager type of one-way communication device. In another embodiment, network-communicating device 710 is a two-way communicating device, which may facilitate an interactive communication between devices. In one embodiment, DMF 701 uses a cellular modem to communicate with PC 712, DMF 714, and entity 716 or DMF Server 720." Bandaru at 10:20-29.

1111. As shown above, Bandaru even contemplates a cellular modem. Bandaru was issued on December 26, 2006, and filed on October 16, 2001. Anyone using a cellular device in that time frame would know that one had to pay for every minute of usage. Doing anything

automatically or periodically would use up time and increase the cost of the cellular plan. It is therefore unsurprising that Bandaru does not disclose doing anything automatically or periodically.

1112. Dr. Johnson also refers in his report to a portion of Bandaru disclosing that a user can add an image to the DMF by moving the corresponding icon or thumbnail from a global storage to the DMF storage. Johnson ¶576. A POSITA would again understand that this is an entirely manual process; it does not involve *periodically* relaying image data in response to a frame device *automatically* issuing a request.

1113. Dr. Johnson also, rather inexplicably, discusses a DMF doing some level of configuration automatically. Again, I first note that the term "automatic" does not appear in Bandaru. Setting that to one side, at most, what Dr. Johnson is pointing to is about configuring the DMF device, not about relaying image data.

1114. Dr. Johnson attempts to bolster his assertion stating: "For example, as discussed above, it would have been obvious for the DMF to automatically issue a request for image data corresponding to a subscription installment to the DMF network service (e.g., according to a client pull model), in accordance with periodic time intervals specified by the subscription." Johnson ¶578.

1115. I first note that "subscription installment" does not appear in Bandaru. In *one* place, Bandaru states that a user can subscribe to categories of images. Bandaru at 10:44-50. Bandaru also does not disclose a "client pull model." Nothing in the description in Bandaru discloses or suggests periodically or automatically relaying images to the DMF. Rather, Bandaru simply discloses that one can have specific categories of images one is interested in.

1116. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that a DMF can

"synchronize with the DMF network on a periodic basis" to upload "to the DMF network objects that were loaded into the DMF from the external devices" and to download "to the DMF objects that . . . have not been sent to the DMF." Bandaru II at 16:33-60. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate the DMF and server performing periodic and automatic connections/communications to receive images. This feature was apparently never contemplated by Bandaru until after the Patents-in-Suit.

1117. See also claim 1i.

1118. For at least the reasons described in this section, Bandaru does not anticipate or render obvious these claim limitations.

vi. Claim [2.m] wherein said at least one frame device is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in memory of said frame device.

1119. A POSITA would first note that the words "authenticate" and "authentication" do not appear anywhere in Bandaru. Furthermore, no related terms appear in Bandaru such as "password," "security," "confidential," or "login." This is a strong indicator that these technologies were not even envisioned by Bandaru.

1120. Regarding authentication, Dr. Johnson merely states: "Bandaru discloses a device-server (e.g., client-server) system for distributing image data. However, to the extent that Bandaru does not disclose the use of client-server authentication within that system, the concept of client-server authentication within such systems was well known as of the earliest filing date of claim 2 of the '573 Patent, including as described in U.S. Patent No. 5,657,390 to Elgamal, and TLS 1.0, which was published as RFC 2246." Johnson ¶618.

1121. Although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Bandaru. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶619-624. Dr. Johnson then states: "Furthermore, a POSITA, as of the earliest filing date of the '573 Patent, would have been motivated to combine Bandaru with the security and device authentication features, including the security handshaking prior to the transfer of data, disclosed in Elgamal and/or RFC 2246 to ensure data security and integrity and authenticate the server within Bandaru's client-server (e.g., DMF-DMF network service) image distribution system. A POSITA would have also been motivated to make this combination to ensure network security on frame devices by requiring the device to authenticate the server to ensure that the device is communicating with the correct server before accepting data from the server." Johnson ¶626.

1122. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[98] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[99] Given those challenges still existed in 2004, if Bandaru

[98] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[99] *Id.*

(filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1123. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1124. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

1125. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1126. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

1127. Or from the U.S. Department of Defense: https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

1128. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1129. Even as of today, no authentication is needed to retrieve an image from an internet server.

1130. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1131. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1132. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1133. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1134. Dr. Johnson states: "The combination of Elgamal with Bandaru is a combination of prior art elements according to known methods to yield predictable result." Johnson ¶630. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Bandaru. Second, as has been pointed out, Bandaru would not benefit from such a combination. A combination of Bandaru with Elgamal or TLS would not be simple or predictable.

1135. Dr. Johnson points repeatedly to Bandaru's discussing a photo for "private use" to infer a need for authentication and security in Bandaru. Bandaru 11:21-24. However, Bandaru does not disclose what this means. Dr. Johnson seems to conflate private use with a user's private photos. However, Bandaru says very little on the matter. There are only two sentences in Bandaru devoted to this topic: "Photo portion 810 can be further divided into private block 814 and public block 816. Private block 814 refers to individual photos, for example, an individual creates a photograph for private use." Bandaru 11: 21-24. However, Figure 8 of Bandaru does elucidate this issue:

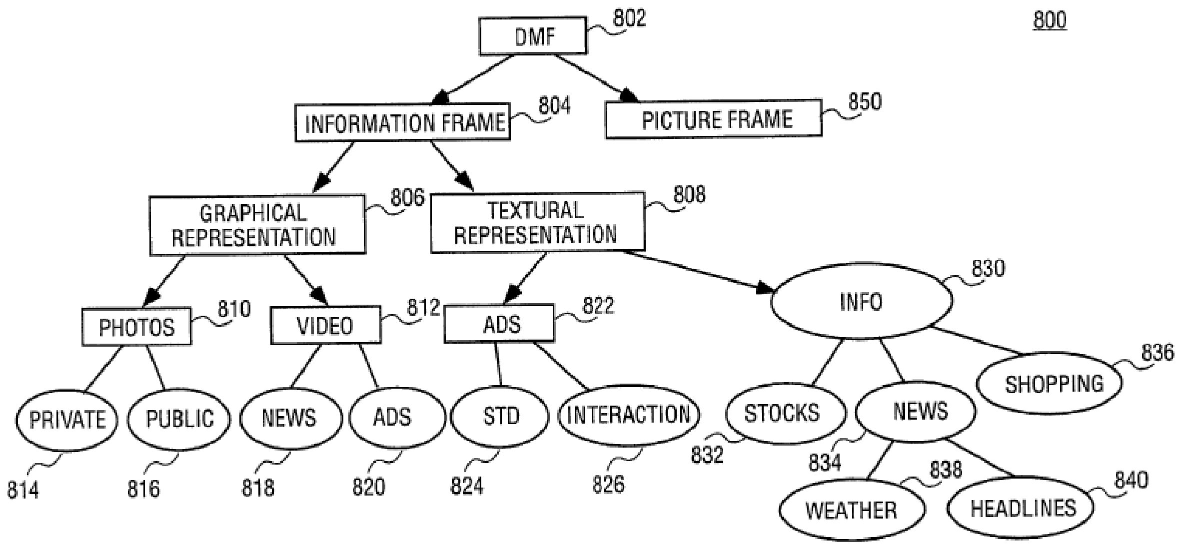


FIG. 8

1136. A POSITA would immediately see that block 814 is related to the photos 810 which are part of the graphical representation 806 of the information frame 804. A POSITA would see that this is referring to information that happens to contain a photo and setting aside that photo for private use. This does not refer to the user's private photos or even to the picture frame 850.

1137. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

3. Claim 19 of the '573 Patent is not invalid in view of Bandaru in combination with one of Nishiyama, Criss, or Kottapurath

i. Claim [19.a] at least one digital picture frame

1138. In reference to this claim limitation, Dr. Johnson again claims the DMF of Bandaru meets what he alleges to be a definition of a frame device/digital picture in the '573 Patent at 6:35-39. Johnson ¶¶513, 687-689, 707.That section of the '573 Patent states "The present invention comprises one or more interconnected frame devices. A frame device is a self-

configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric (e.g., a computer network)." '573 Patent at 6:34-39.

1139. I first note that, to show a repository, Dr. Johnson points to a user profile database in Bandaru, stating: "the DMF is connected via an interconnection fabric (i.e., Internet 718) to the DMF server 720, which includes a repository (i.e., user profile database 724), from which it obtains images for display." Johnson ¶518. However, in the very section of the '573 Patent that Dr. Johnson refers to, the repository of the '573 Patent is quite clearly not a user profile database, but rather an image repository from which the frame device "obtains images for display."

1140. The user profile database 724 is mentioned only 5 times in Bandaru, and at no point is there any disclosure, or even suggestion that this user repository database also has images. Dr. Johnson points to Figure 7 of Bandaru, which I have reproduced here:

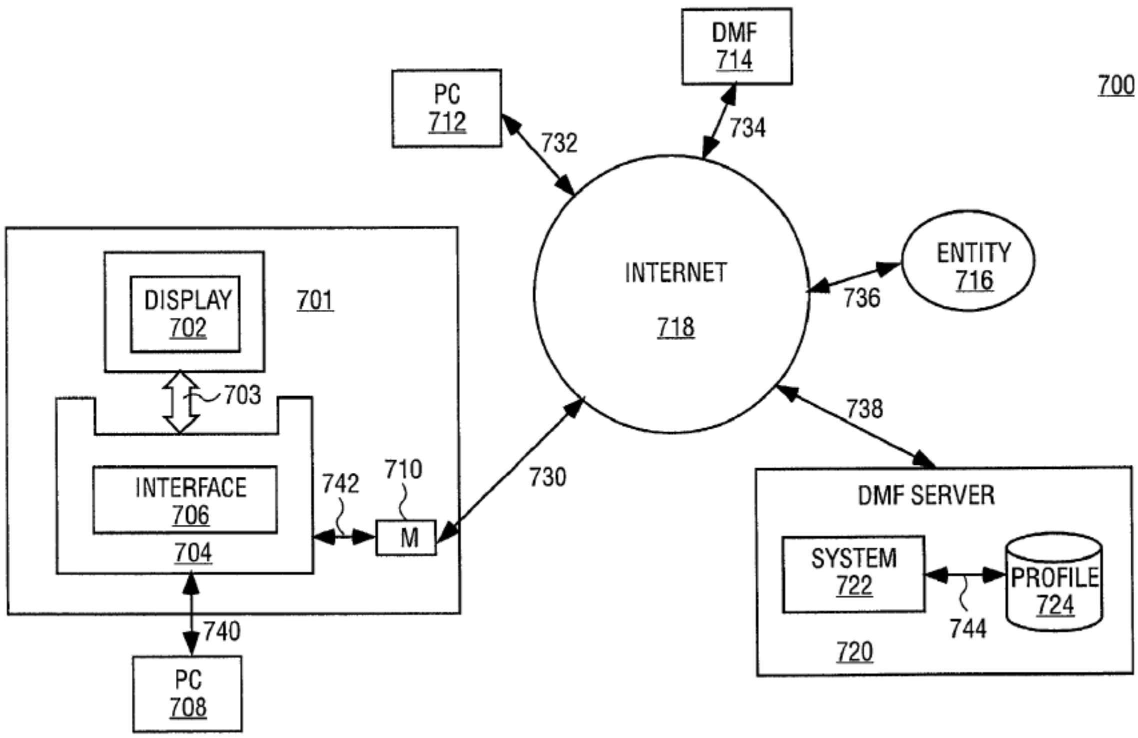


FIG. 7

1141. Neither the user profile database 724, the DMF server 720, or the System 722, are disclosed to provide images. Rather, Bandaru merely discloses that users can use a DMF network service provided by the DMF server 720, and that the DMF network service can be used to "subscribe" to "categories of images," or to "commercially available websites" to receive "stock market news, sports, and weather channels." Bandaru at 10:39-65. The user profile database 724 merely stores user profiles that reflect the selected categories. Bandaru at 10:52-56.

1142. Bandaru specifically discloses the following regarding the DMF server 720:

> DMF server 720 is a network server that provides DMF network service for DMF devices connected to the network. In one embodiment, DMF server includes a system 722 and a user profile database 724. DMF network service provides user and data services, which can be used to configure DMF. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists

> multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:39-57.

Bandaru at 10:52-56.

1143. Thus, at most, the DMF server lists categories of images the user can subscribe to, but there is no disclosure or even a suggestion that these images are stored on the DMF server or in the user profile database, or that the DMF receives images from the DMF server.

1144. Rather, Bandaru discusses receiving image data in figure 5, shown here:

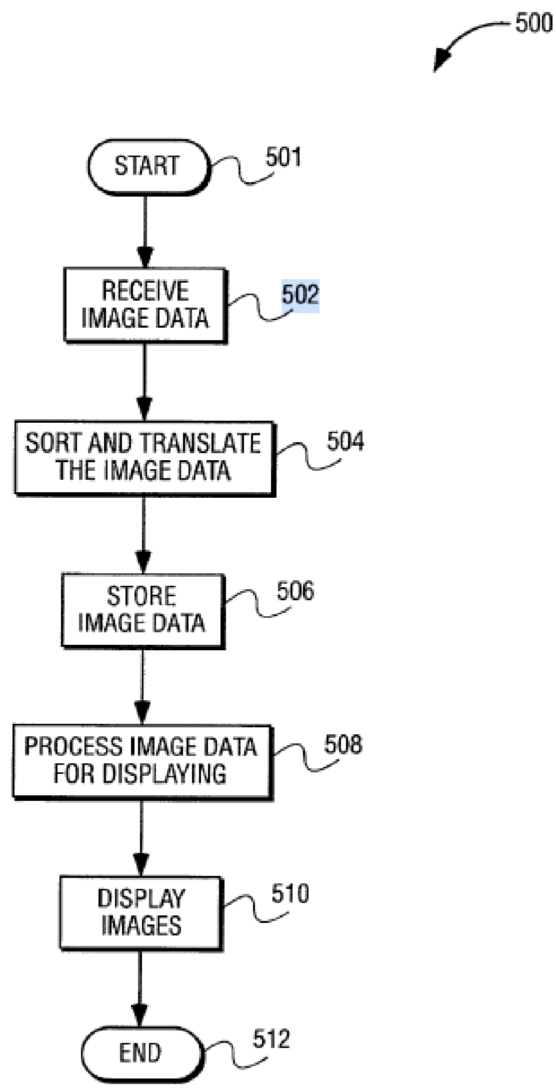


FIG. 5

1145. Bandaru explicitly states: "The process proceeds to block 502, where an interface unit of the DMF 400 receives the image data. The image data may be captured by image capturing devices, such as a digital or video camera." Bandaru at 8:1-4. Bandaru mentions that the DMF is "capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of

networks." Bandaru at 3:1-4. However, Bandaru does not disclose that the DMF server or the user profile database provide the images. Rather, Bandaru merely states that images can be received from an "Internet node," (i.e., some Internet connected source like a website that provides the website content) and that images received by the DMF can have an Internet address associated with the image that "indicates which Internet node was used for sending the image data to the DMF 102," including an "Internet address [that] links to other websites that are related to the image." Bandaru at 3:59-61, 4:18-34. But when referring to the DMF server and user profile database specifically, Bandaru merely discloses that the DMF server and user profile database are used to "configure" the DMF by allowing a user to subscribe to image "categories" or websites. Bandaru at 10:6-11:2.

1146. Bandaru thus does not disclose an image repository from which the DMF receives images, and thus Dr. Johnson's statement that the DMF meets the "definition" of frame device in the '573 Patent is incorrect.

1147. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

ii. Claim [19.c] configured to operate according to preferences defined by a user,

1148. For this claim element, Dr. Johnson simply refers back to his analysis regarding other claims. Dr. Johnson's analysis is again deficient for the following reasons.

1149. Dr. Johnson first asserts that use of the "user input device" in Bandaru to pause or move forward or backward in displaying images corresponds to this claim limitation. Johnson ¶¶522-523. However, this assertion ignores the description of the user input device in Bandaru, as well as the user preferences disclosed by the '573 Patent.

1150. Bandaru is clear on what the user input device can do. As one example, Bandaru states:

> The user-input device 410 contains a reverse button 420, a pause button 422, and a fast forward button 424. The reverse button 420 allows a user to view previously dis played images, while the fast forward button 424 allows a user to view next sequential images. The pause button 422 causes a currently displaying image to freeze until a release command is issued by a Subsequent activation of the pause button 422.

Bandaru at 7:51-58.

1151. The '573 Patent first decries the inadequacy of prior art to function according to preferences set by a user: "Additionally, the receiver cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences." '573 Patent at 4:4-6. The '573 Patent then describes how preferences set by a user are a benefit in the current invention, stating: "Each frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences. For example, a frame device may dynamically obtain image data from a networked data source (e.g., a client computer), store that data, and then display that data according to criteria established by an authorized user." '573 Patent at 8:38-41.

1152. The '573 Patent provides additional details on the preferences established by a user:

> For example, data about each user and the preferences associated with that user may be held in the data repository. Each frame device is configured to connect to the data repository at one or more predefined intervals utilizing an interconnection fabric such as the Internet. Once a frame device connects to the data repository, it utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device. For example, the functions provided by the onboard Software may be modified when the behavior characteristics are updated. The data repository is therefore responsible for queuing and archiving image data and/or software data for each frame device associated with the data repository.

'573 Patent at 19:11-25.

1153. A POSITA would notice several things about the ’573 Patent preferences established by a user. First, these preferences can be stored in a database (“data about each user and the preferences associated with that user may be held in the data repository”). Second, the frame device automatically configures to execute according to preferences established by a user (“Each frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences”).

1154. In Bandaru, nothing is displayed according to preferences set by a user. Rather, once images are stored on the digital media frame (DMF), the user may simply navigate through the images manually using the input device (buttons 420, 422, 424). This is not only clear from the text of Bandaru quoted above, but also from Figure 4 of Bandaru:

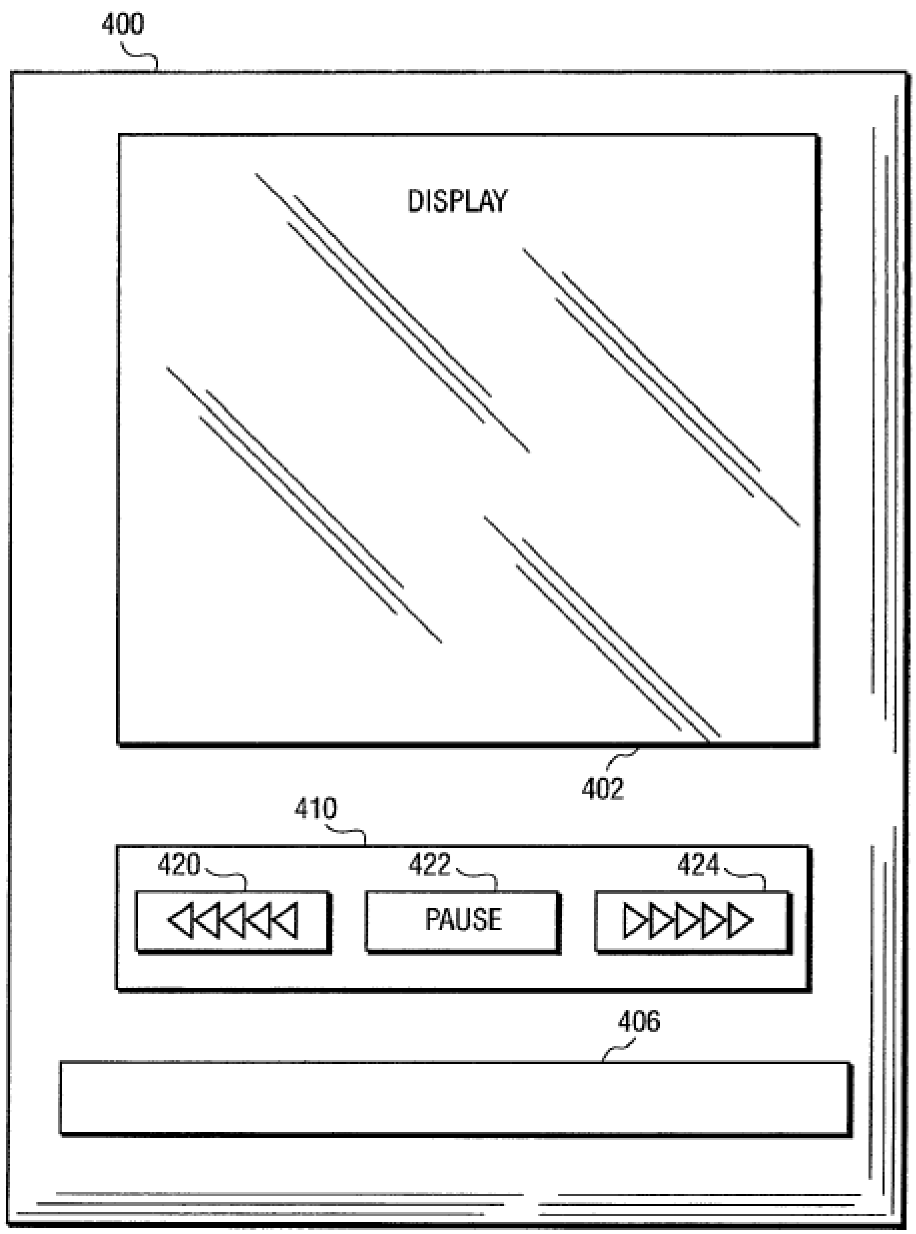


FIG. 4

1155. Dr. Johnson attempts to conflate the above-described user input device of Bandaru with completely separate passages from Bandaru describing operations taken by a computer providing images to the DMF. First, Dr. Johnson cites the following from Bandaru:

> Upon receipt of image data, the computer 112 may perform some functions before the computer 112 passes the image data to the DMF 102. The function may involve reordering the sequences of the images to be displayed, or converting one type of image data format to another type of image data format, and so on.

Johnson ¶522 (citing Bandaru at 3:45-51).

Bandaru at 3:45-51.

1156. Then, in the same sentence, Dr. Johnson states Bandaru discloses "providing the 'user certain controls to manage how images should be displayed.'" Johnson ¶522 (citing Bandaru at 4:40-50). But this section of Bandaru at 4:40-50 simply describes the various physical inputs devices of the DMF, such as the above described "push button" shown in FIG. 4 of Bandaru.

1157. Dr. Johnson appears to be attempting to merge Bandaru at 3:45-51 with Bandaru at 4:40-50. This is an error. A POSITA reading Bandaru would immediately see that, at 3:45-51, Bandaru is describing what the computer will do when providing images to the DMF, and does not disclose or even suggest a user being involved, or that a user can provide any settings or preferences. Then, several paragraphs later, Bandaru at 4:40-50 describes the simple buttons in Bandaru as shown in FIG. 4, which merely let a user pause or move forward or backward between images stored on the DMF.

1158. Thus, what Dr. Johnson describes as an "image display sequence defined by the user," Johnson ¶523, a POSITA would recognize as simply a user controlling a device manually using forward, reverse, and pause buttons. These portions of Bandaru relied upon by Dr. Johnson do not disclose, or even suggest, storing preferences established by the user, or automatically configuring the display according to said preferences.

1159. Dr. Johnson then turns his attention to the web page for the DMF in Bandaru. Specifically, Dr. Johnson states: "For example, Bandaru discloses a user web interface provided by a DMF network server that enables the user to configure the user's DMF device, select DMF

network services for the DMF device, and select images and/or subscribe to image categories for delivery to, and display by, the DMF device." Johnson ¶524.

1160. I would first note that Bandaru does not contain the phrases "web interface" or "user web interface." Rather, Bandaru describes a "DMF web page." This is an important difference as will be seen in subsequent paragraphs.

1161. I would next note that Bandaru provides a rather thorough description of what the DMF web page does:

> In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:44-56.

1162. At most, what Bandaru is disclosing is a web page that lets a user subscribe to categories of images. These images can include commercially available websites, including stock market news pages sports, and weather channels. These will not display images in a sequence established by the user as disclosed in the '573 Patent. Rather, this allows Bandaru's DMF to function as a web browser and the user can receive information from certain web pages via the browser. Bandaru at 10:63-65 (stating the DMF 710 can access the web site).

1163. See also claim 1b.

1164. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iii. a user interface . . . [19.g] configured to obtain image data and said preferences from said user [19.h] and provide said image data and said preferences to said at least one server system

1165. This element of claim 19, in its entirety, recites "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one digital picture frame and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system."

1166. Dr. Johnson again refers back to previous sections of his report for this element. Johnson ¶¶713-714. Dr. Johnson states that Bandaru's DMF web page is a user interface coupled to a server system and separable from the DMF device of Bandaru because the DMF web page is provided by DMF network services managed by the server 720, and because the DMF web page can be accessed by another device besides the DMF devices, such as a PC. Johnson ¶¶535-536, 539-541, 589-592.

1167. However, Bandaru does not disclose or suggest that the DMF website of Bandaru is configured to obtain image data and preferences from a user, nor that the DMF website provides image data and preferences received from the user to at least one server system.

1168. Dr. Johnson first refers to a portion in column 13 of Bandaru that describes use of the DMF website, which states "DMF window allows a user to add an image to [the] DMF by moving the corresponding icon or thumbnail from the global storage (one portion of the screen) to the DMF storage (another portion of screen.)" Johnson ¶545 (citing Bandaru at 13:41-51). Dr. Johnson then asserts that "the image data may be provided by an input device, such as a camera or a PC, or from a database of the DMF server." Johnson ¶545. The section of Bandaru that Dr. Johnson cites as allegedly disclosing receiving images "from a database of the DMF server" (Dr. Johnson's words) does not even state such. As shown below, the cited portion of Bandaru (3:11-14) simply states that the DMF can include an "internet connector" and does not mention

the DMF server. Thus, Dr. Johnson falsely attempts to assert that Bandaru discloses (when it actually does not) that the DMF web page obtains images from users and passes those images to the DMF server for storage.

- To attempt to support his claim, Dr. Johnson jumps back to portions of Bandaru from column 3 and 11, and forward to column 14, which state:
- "FIG. 1 illustrates an embodiment of a connection between DMF and external input devices 100. The connection includes a DMF 102, a camera 110, a personal computer ("PC") 112, a cable connector 114, and an Internet connector 116," Bandaru at 3:11-14.
- "Information mode 804 displays informational data, such as stock trading news. Picture mode 850 displays a sequence of pictorial images that are previously received and stored in the memory. Information mode 804 further contains a graphical representation portion 806 and a textural representation portion 808. Graphical representation portion 806 displays pictorial images while textual representation portion 808 displays text or letters. Graphical representation portion 806 can be further split into photos portion 810 and video portion 812. The photo portion 810 includes still pictorial images and video portion 812 contains motion images. Photo portion 810 can be further divided into private block 814 and public block 816. Private block 814 refers to individual photos, for example, an individual creates a photograph for private use." Bandaru at 11:12-24.
- "means for allowing selection of images from the database to be forwarded to said remote color display device." Bandaru at 14:8-10 (claim 1).

1169. All of the above quotations from Bandaru have to do with how the digital media *frame* of Bandaru receives images, not that the DMF web page can receive images from users, or provide such images to a server for storage. In fact, the portion of claim 1 of Bandaru that Dr. Johnson cites, in context, does not disclose that images are stored in the database. Rather, claim 1 of Bandaru merely recites that the database is a "database of image references."

1170. There is ***no*** disclosure in Bandaru that the DMF web page is used to obtain image data and preferences from users and provide image data and preferences to the DMF server. Rather, Bandaru only describes that images are shown as thumbnails in the DMF web page, and Bandaru lacks any description of how the DMF server obtains these images. Particularly, Bandaru describes

the DMF website shows a user two portions of a screen: (1) "DMF window allocates a portion of screen identified as DMF storage and uses icons or thumbnails to list image files stored in DMF under the DMF storage"; and (2) "a second portion of screen identified as global storage where various image files are listed using icons or thumbnails." Bandaru at 13:32-40. A user can use the DMF web page to "add an image to DMF by moving the corresponding icon or thumbnail from the global storage (one portion of screen) to the DMF storage (another portion of screen)" or "delete an image from DMF by removing the corresponding icon or thumbnail from the DMF storage." Bandaru at 13:41-50.

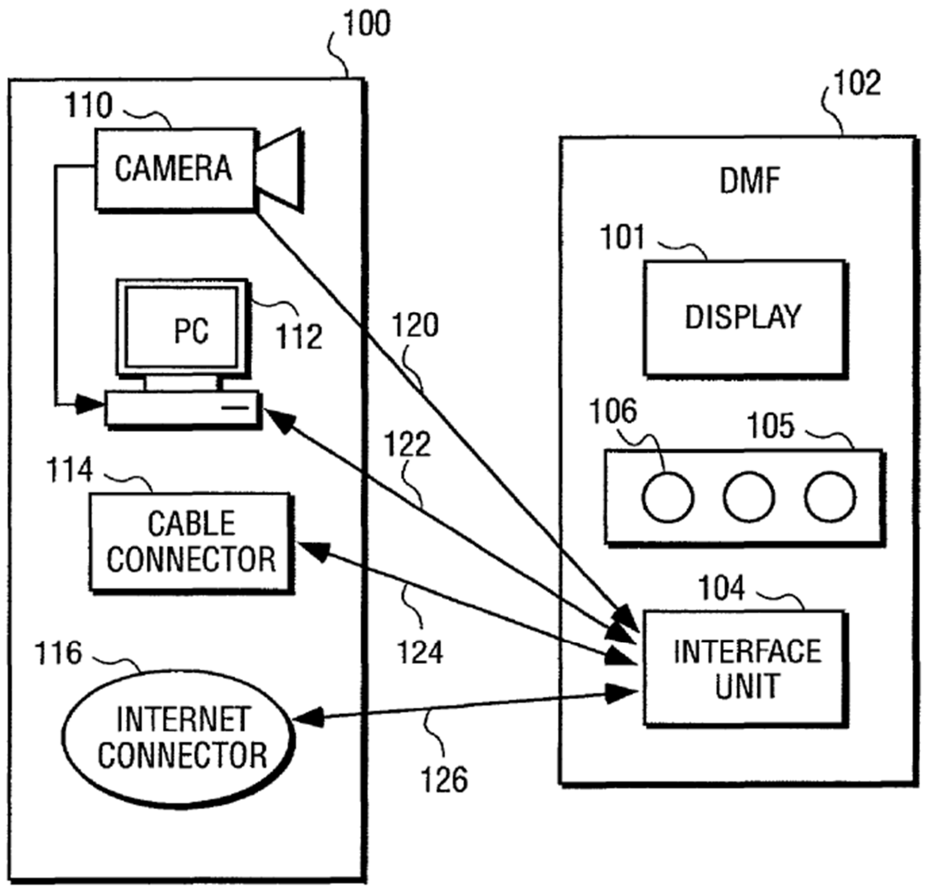
1171. Bandaru thus merely discloses that the server website allows a user to associate or disassociate images with a DMF device using the DMF web page. However, there is no disclosure in Bandaru that a user can use the DMF web page to provide new images to the DMF web page, nor that the DMF web page can forward new images received for storage on the DMF server. The only description for how images can be acquired cited by Johnson states:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion. The computer 112, which may be a PC, a workstation, a mini-computer, or a mainframe computer, or a processor based system, receives image data from other devices, such as, scanners, Internet servers, or cameras 110. Upon receipt of image data, the computer 112 may perform some functions before the computer 112 passes the image data to the DMF 102 **[DMF 102 is the DMF frame device; not the DMF server]**. The function may involve reordering the sequence of the images to be displayed, or converting one type of image data format to another type of image data format, and so on.

Johnson ¶¶547-549 (citing Bandaru at 3:42-51).

Bandaru at 3:42-51.

1172. As shown above, this portion of Bandaru relied upon by Dr. Johnson merely discloses that images can be obtained by devices from a camera 110 connected to a computer 112 local to the digital media frame device, and the computer 112 in turn provides the images to the digital media frame device, as shown in FIG. 1 below.



1173. Therefore, this passage of Bandaru cited by Dr. Johnson does not support his position that Bandaru's DMF web page can obtain images from users. Rather, there is no disclosure in Bandaru that the DMF website includes functionality for users to upload new images to the server. Additionally, Bandaru discloses that a user need not even use the DMF server website, but can alternatively configure a digital media frame device by calling a "a DMF network service provider to verbally convey to a DMF network service representative a new user DMF

configuration." Bandaru at 10:61-11:1. Clearly, new images cannot be provided by a user to the DMF server verbally over the telephone.

1174. Since Bandaru includes no disclosure or suggestion that the DMF web page obtains image data from a user, then it logically follows that the DMF web page also cannot provide *said* image data to a server system, as recited in Claim 1.

1175. Dr. Johnson appears to take the position that, in Bandaru, subscribing to categories using the DMF web page and storing selected subscriptions in a user profile discloses providing said image data to said at least one server system. However, again, the section of the Bandaru that Dr. Johnson cites does not support his view. The section is provided here: "In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF." Bandaru 10:46-55.

1176. But it does not follow that storing "subscribed to" image categories or websites means that image data is received a user is stored by a server system. Subscription data is not image data as a POSITA would understand it from the claims of the '573 Patent. Dr. Johnson appears to recognize this issue, and states that "to the extent image data obtained from the user is not stored within the user profile database residing within the DMF server system, such image data is relayed to the DMF via the DMF server system" apparently because "[t]he image data is provided to the DMF server system for such transmission to the DMF." Johnson ¶560. Here, it

seems Dr. Johnson is attempting to take the position that, even though Bandaru does not disclose where images shown in the DMF web page come from or where they are stored, the image data must be provided to the DMF web page because images can be sent to digital media frame devices from the DMF server. But Bandaru does not suggest that images must come from users. Rather, like the website content users can subscribe to, it appears that Bandaru considers that images come from other sources.

1177. Therefore, at best, Bandaru describes a user interface (DMF web page) that allows a user to associate or disassociate images with a digital media frame (DMF) or subscribe to categories via an associated user profile, but does not disclose that a user interface that *obtains image data* from said user, and *provides said image data* to said at least one server system, as required by Claim 1 of the '573 Patent.

1178. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iv. Claim [19.j] wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one digital picture frame when said at least one digital picture frame automatically issues a request for said image data

1179. Dr. Johnson again refers back to previous sections of his report for this element. Johnson ¶716.

1180. For this claim limitation, it appears that Dr. Johnson has simply ignored the "periodically relay" and "automatically issues a request for said image data" claim limitations.

1181. Dr. Johnson, in paragraph 568 of his report states:

> Moreover, Bandaru discloses that after the user uses the PC to request DMF network service, "DMF network service 1058 provides services directly to DMF 1052 after it receives the request." *Id.* at 12:22-24; see also *id.* at 4:1-17 (describing capture and transfer of image data from Internet servers to DMF in FIG. 2).

Johnson ¶568.

1182. First, Dr. Johnson is taking this language out of context. The "request" described at 12:22-24 of Bandaru is initiated by a user:

- "To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service 1058." Bandaru at 12:3-5.
- "Once DMF network service 1058 is initiated, it allows the user to use the services." Bandaru at 12:7-9.
- "PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050." Bandaru at 12:21-26.

1183. As shown above, the "request" pointed to by Dr. Johnson is not automatic nor made by a frame device, but is initiated manually by a user and via PC 1050. Bandaru's process is neither automatic nor periodic. It is done manually when the user sends a request.

1184. Dr. Johnson goes on to point to various elements of Bandaru he believes are requests for images. But none of the portions he cites are automatic, nor do they happen periodically. Rather, they are manual. It should also be noted that the word "automatic" does not appear in Bandaru. Neither do the words "periodic" or "periodically" appear in Bandaru.

1185. Bandaru does not explain exactly how a DMF receives images associated with the DMF. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other functionality of the two-way program is described. Bandaru merely describes that images are "forwarded" from a device such as a PC to the DMF:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion.

Bandaru at 3:31-41.

1186. Similarly, the claims of Bandaru only describe that images are "forwarded," "transmitted," or "provided to" the DMF. Bandaru simply does not disclose an automatic and periodic request/response communication protocol as recited in the '573 Patent.

1187. Dr. Johnson appears to admit this in paragraph 573 of his report when he asserts: "To the extent Bandaru does not expressly disclose that the user's preferences and image data are periodically relayed by the DMF server system to the DMF, it is my opinion that it would have been obvious to a POSITA for the DMF server system to periodically relay such images and preferences to the DMF as periodic updates for advertisements, weather, stock trading news, headline news, daily news summaries, and interactive online gambling and consistent with the subscribed image data categories."

1188. However, most of the information Dr. Johnson points to in Bandaru is merely textual information, including weather, stocks, headlines, interactive gambling (part of the interactive section 826), Bandaru at 11:34-40, and advertisements, are, as shown in FIG. 8 of Bandaru, below, textual (i.e., not images) information provided as part of textural representation 808. This is made even more clear in figure 8 of Bandaru:

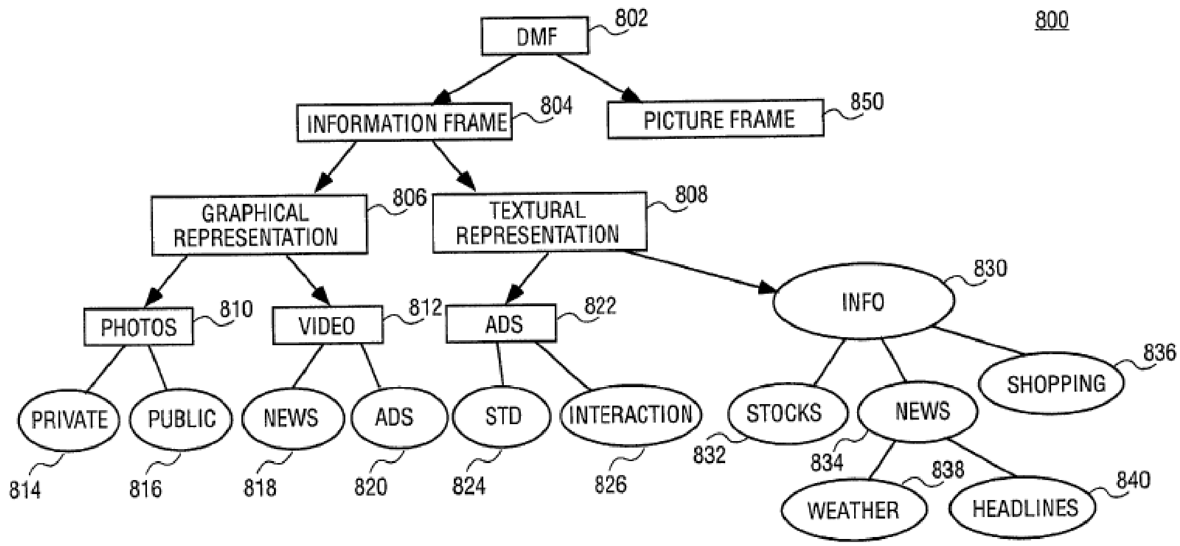


FIG. 8

1189. Dr. Johnson is conflating information from 830 with pictures from 850.

1190. The modes are described as: "While in the pictorial mode of DMF displays a sequence of predefined pictures, the information mode of DMP displays a set of information or data such as news, financial data, and the like." Bandaru at 9:50-53. (Note: DMP is in Bandaru, but I assume this is a typo and should read DMF).

1191. Bandaru goes on to further describe a financial mode: "Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, such categories can include news, sports, entertainment, financial data, et cetera." Bandaru at 9:63-65.

1192. Also, Bandaru simply does not disclose any periodic or automatic relay of images. Even if one agrees with Dr. Johnson that relaying of information such as "advertisements, weather, stock trading news, headline news, daily news summaries, and interactive gambling" would be

periodic, there is no description in Bandaru of how the transmission of such data would occur, given Bandaru is silent regarding any periodic or automatic relay of any data. This claim element requires that the periodic relay of data is in response to a request, and, given Bandaru does not disclose anything regarding periodic or automatic relay of images, there is no suggestion of any request being made by the DMF. Data can be transmitted in various ways, such as a server push. Bandaru simply does not disclose or suggest the specific claim language of this claim element.

1193. Immediately after indicating that Bandaru does not disclose periodic transmissions, Dr. Johnson then makes a rather puzzling statement: "Bandaru further discloses that the DMF server system periodically relays said image data and said preferences to said at least one frame device when said at least one frame device issues a request for said image data." Johnson ¶574. Note that Dr. Johnson left out "automatically" issues a request from this statement, which is explicitly required in the claim of the '573 Patent. As I have explained, in Bandaru, the request is manual and not automatic.

1194. Dr. Johnson then refers to the portion of Bandaru, again, regarding the different devices that can communicate with the DMF services: "In one embodiment, a user may use the telephone 1054 to initiate DMF network service 1058. Once DMF network service 1058 is initiated, it allows the user to use the services, such as reconfiguration of DMF. For example, when DMF 1052 needs to be reconfigured, DMF network services 1058 supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052. It should be noted that communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:6-11.

1195. Dr. Johnson also points to Bandaru at 12:15-20. Johnson ¶608. That excerpt from Bandaru states: "In another embodiment, a request for DMF network Service 1058 from DMF

1052 can be initiated via a direct connection. A direct connection is a cable or a modem that is directly connected between DNS 1059 and DMF 1052. The Internet 1056 can be an alternative connection between DNS 1059 and DMF 1052."

1196. Nothing in that section discloses, or even suggests anything occurring automatically. Aside from the fact that the terms "automatic" and "automatically" do not appear anywhere in Bandaru, a POSITA would understand that Bandaru actually teaches away from such automatic activity.

1197. The term "modem" is one that a POSITA would be very familiar with, and in fact most lay persons would be familiar with. Modems are not even always connected. One initiates a connection for a particular period of time, then ends that connection. Without an automatic initiation of communication, one could not have any automatic transmission.

1198. Again, a user utilizing a telephone or web page to manually conduct some activity is neither *periodic* nor *automatic*. Furthermore, Bandaru is again quite clear on the type of connection he contemplated "Network-communicating device 710 may be a modem or a cordless modem, such as a cellular modem. In one embodiment, network-communicating device 710 is a one-way transmitting device, such as a pager type of one-way communication device. In another embodiment, network-communicating device 710 is a two-way communicating device, which may facilitate an interactive communication between devices. In one embodiment, DMF 701 uses a cellular modem to communicate with PC 712, DMF 714, and entity 716 or DMF Server 720." Bandaru at 10:20-29.

1199. As shown above, Bandaru even contemplates a cellular modem. Bandaru was issued on December 26, 2006, and filed on October 16, 2001. Anyone using a cellular device in that time frame would know that one had to pay for every minute of usage. Doing anything

automatically or periodically would use up time and increase the cost of the cellular plan. It is therefore unsurprising that Bandaru does not disclose doing anything automatically or periodically.

1200. Dr. Johnson then refers to a portion of Bandaru disclosing that a user can add an image to the DMF by moving the corresponding icon or thumbnail from a global storage to the DMF storage. Johnson ¶576. A POSITA would again understand that this is an entirely manual process; it does not involve *periodically* relaying image data in response to a frame device *automatically* issuing a requests.

1201. Dr. Johnson then, rather inexplicably, discusses a DMF doing some level of configuration automatically. Again, I first note that the term "automatic" does not appear in Bandaru. Setting that to one side, at most, what Dr. Johnson is pointing to is about configuring the DMF device, not about relaying image data.

1202. Dr. Johnson attempts to bolster his assertion stating: "For example, as discussed above, it would have been obvious for the DMF to automatically issue a request for image data corresponding to a subscription installment to the DMF network service (e.g., according to a client pull model), in accordance with periodic time intervals specified by the subscription." Johnson ¶578.

1203. I first note that "subscription installment" does not appear in Bandaru. In *one* place, Bandaru states that a user can subscribe to categories of images. Bandaru at 10:44-50. Bandaru also does not disclose a "client pull model." Nothing in the description in Bandaru discloses or suggests periodically or automatically relaying images to the DMF. Rather, Bandaru simply discloses that one can have specific categories of images one is interested in.

1204. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that a DMF can

"synchronize with the DMF network on a periodic basis" to upload "to the DMF network objects that were loaded into the DMF from the external devices" and to download "to the DMF objects that . . . have not been sent to the DMF." Bandaru II at 16:33-60. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate the DMF and server performing periodic and automatic connections/communications to receive images. This feature was apparently never contemplated by Bandaru until after the Patents-in-Suit.

1205. See also claims 1i, 2j.

1206. For at least the reasons discussed in this section, Bandaru does not anticipate or render obvious this claim limitation.

v. Claim [19.k] and wherein said at least one digital picture frame is configured to obtain an update for said operating system software from said at least one server system.

1207. For this claim element, Dr. Johnson refers back to his previous analysis regarding unasserted Claim 4, and so I have reviewed that analysis here. In reference to the claim element [4.k], Dr. Johnson states: "Although Bandaru does not expressly disclose a method or process by which the DMF obtains an update of the DMF's operating system software from the DMF network service, the concept of updating the operating system of a device from a server system was a well-known method for managing client-server systems before the earliest filing date of the '573 Patent." Johnson ¶655.

1208. I do agree with Dr. Johnson that Bandaru does not disclose any method or process to obtain an update.

1209. Dr. Johnson argues that Bandaru discloses operating system software, but merely cites to portions of Bandaru that disclose that the DMF "may contain configuration software, which

allows the DMF 701 to configure itself" and that the DMF has a processing unit that "executes software to control operations of the DMF." Johnson ¶651 (citing Bandaru at 11:5-6, 4:18-21, 6:12-27, 6:28-35, 6:57-65, 7:46-48, 7:66-8:40, FIGS. 2-3, 5-6, 11).

1210. However, a POSITA would immediately recognize that the term "operating system" does not even appear in Bandaru. Thus, one challenge to Dr. Johnson's interpretation is that there is no suggestion of what operating system Bandaru might have. It is not even known if this is an operating system that can be updated from a server.

1211. Dr. Johnson combines, in the alternative, each of Nishiyama, Criss, and Kottapurath with Bandaru in an attempt to meet this claim element. However, it should be also noted that none of Nishiyama, Criss, and Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital picture frames. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

1212. Dr. Johnson first discusses Nishiyama. Johnson ¶657-658. However, the very section that Dr. Johnson points to in Nishiyama belies his interpretation. Dr. Johnson points to

"Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20." Nishiyama at 36:6-8. This portion of Nishiyama states:

> 1-3-5. Remote Maintenance of Software of Terminal System 30 1. Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20.
>
> Note: when commercially-available remote-access software is used, terminal systems 30 for installing software can be specified.

Nishiyama at 36:4-11.

Nishiyama, 36:4-11.

1213. Nishiyama thus similarly discloses that remote maintenance can be performed on terminal systems by installing, modifying, updating, and maintaining the software via the network under control of the server using "commercially-available remote-access software." Nishiyama at 36:4-11. While Nishiyama discloses that software of terminals can be remotely updated, Nishiyama states this is done using "remote-access software," indicating software updates are installed from the server using such remote-access software. However, Claim 19 recites that the at least one frame device obtains an update for its operating system, indicating it initiates the request, not that the server remotely accesses the at least one frame device to install updates.

1214. A POSITA would recognize that an operating system is complex and, while updating operating systems remotely is common in 2023, it was not always quite so common. As an example of an operating system, Dr. Johnson cites, elsewhere in his report, Windows 98 as prior art. The book *Using Windows 98 Platinum Edition*[100] has a section on updating Windows 98. That section is three pages long (pages 292 to 294) with multiple steps. These steps must be executed by a user:

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[100] Bott, E., & Person, R. (1998). *Using Microsoft Windows 98 with Cdrom*. Que Corp.

a. Click Start and click the Windows Update icon. Internet Explorer comes up automatically and attempts to connect to Microsoft Windows Update site shown in figure 16.1.

b. Click on Update Wizard. A registration wizard pops up if this is the first time you have used the Update Wizard (see figure 16.2). You must fill out the registration to continue. Part of the registration is to upload your configuration files to Microsoft. You can deselect a check box, so this doesn't happen if you want to.

c. The Update Wizard web page contains two options. Update and Restore. Click Update to scan the internet for updated system files. A new Internet Explorer window pops up, as shown in figure 16.3. The update Wizard loads necessary components into your system and then scans the database for updated drivers.

d. As updates are found the wizard refreshes the screen and the list of files available for update. Select a file in the list on the left to see its description as well as its size, and approximate download time on the right side of the main windows.

e. Click on Install to install the file. Only one file can be installed at a time, and your computer may need to be restarted after a file is installed. Let the computer restart if necessary before downloading a second update in order to verify that it is still working properly.

1215. The section goes on to discuss the various problems that can arise when updating Windows 98. But even if everything goes smoothly, an operating system consists of numerous individual files and applications. Windows 98 required a user to individually download and install these one at a time, with potentially numerous pauses to restart the system.

1216. Dr. Johnson not only does not address the issues inherent in updating an operating system, but he places unfounded inference upon unfounded inference. Bandaru does not disclose updates at all. Dr. Johnson proposes to combine that with Nishiyama, which only discloses updating an individual application, not an operating system. Taking two pieces of prior art, neither of which disclose updating an operating system, and combining them, still does not disclose or render obvious updating an operating system.

1217. As indicated above, Dr. Johnson also ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[101] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[102] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*. Nishiyama is thus not in the same field of endeavor as the Patents-in-Suit because Nishiyama is directed to providing video advertisements to public displays/billboards, whereas the Patents-in-Suit are in the field of consumer digital picture frames.

1218. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of

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[101] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[102] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. A review of undergraduate computer science courses offered at Rice University,[103] where Dr. Johnson is a professor, shows not even a single course in Interactive Video Systems, or any video system at all. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Nishayama.

1219. Using Dr. Johnson's own definition of a POSITA, it is clear that such a POSITA would not be capable of combining Nishiyama with any other art.

1220. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine Criss with Bandaru. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Bandaru. Criss is related to managing cellular networks, not to the field of consumer digital picture frames. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

1221. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of

103 https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" a host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

1222. Claim 19 requires the at least one digital picture frame obtain operating system updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the frame device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Bandaru, this combination would not reach the claims of the Patents-in-Suit.

1223. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶663-664. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Bandaru than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work

with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

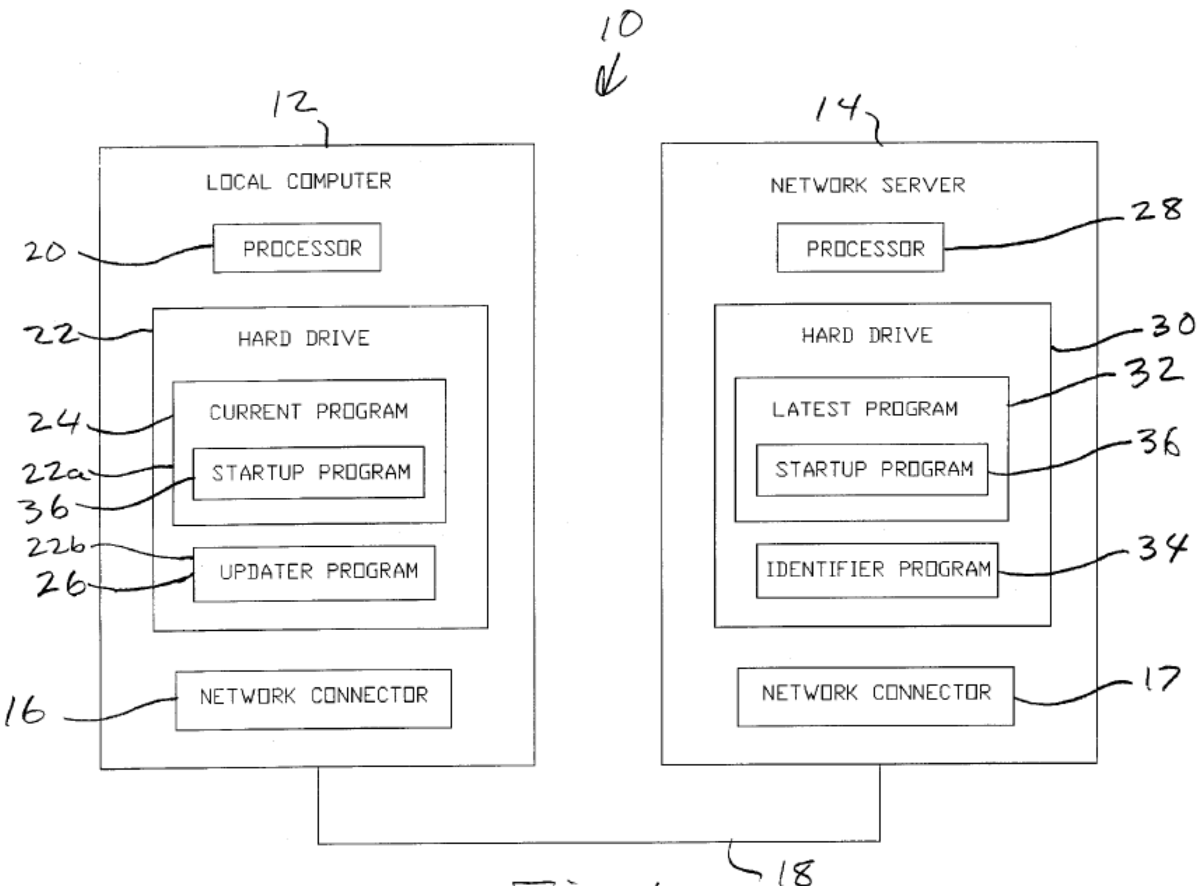

Fig. 1

1224. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Bandaru. Figure 3 of Kottapurath shows the process:

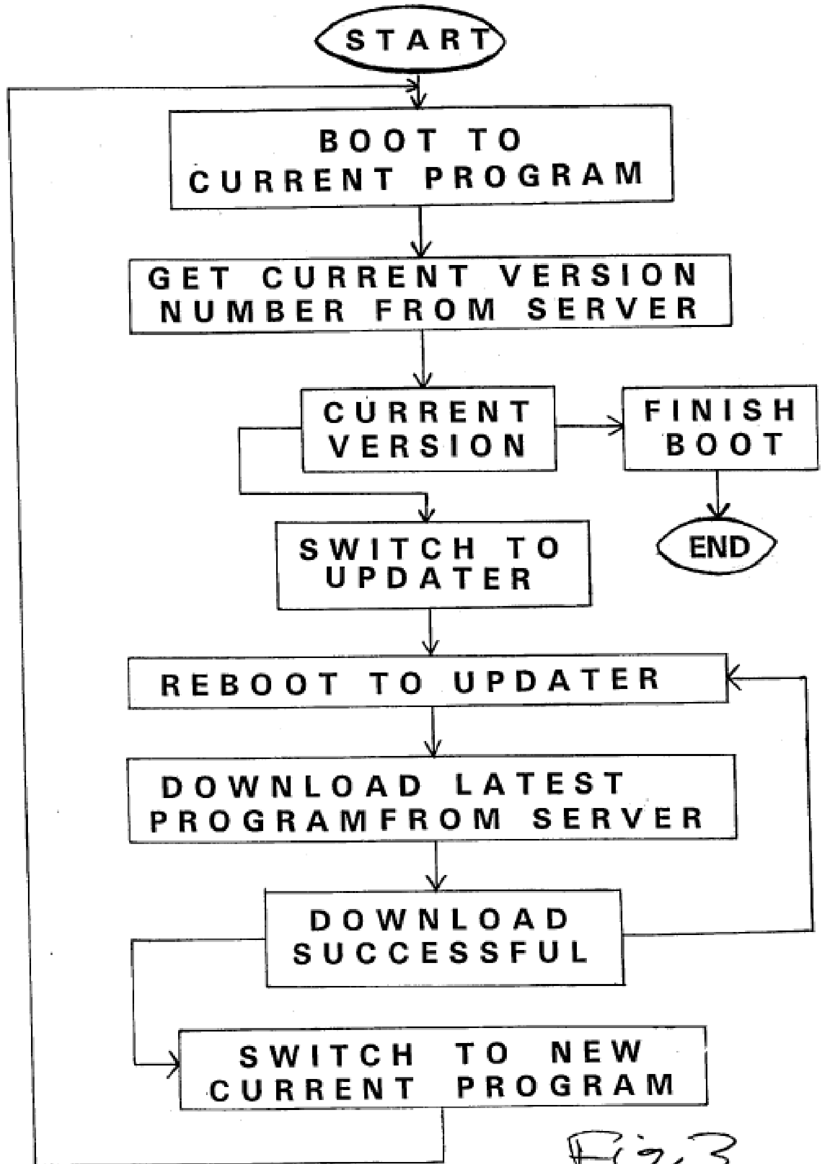

Fig. 3

1225. Dr. Johnson then states: "A POSITA, as of the earliest filing date of the '573 Patent, would have been motivated to combine the software update functions described in Nishiyama, Criss, and/or Kottapurath with Bandaru's client-server system (DMF-DMF network service) to provide DMF software updates through a central DMF network service." Johnson ¶665. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF

somehow to obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

1226. Dr. Johnson is quite clear in where he believes updates will come from: "Moreover, it would have been obvious to a POSITA that the operating system software update could be obtained from the same server system that relays image data and preferences to the frame device." Johnson ¶674. However, this is flawed. The only possible server in Bandaru that might be used is the DMF server which has a user profile database. As has been pointed out, adding any additional tasks to this server is very problematic: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059. server 1050, or server 1062." Bandaru at 12:1-3. Bandaru contemplates having the user profile database/DMF network service on a DNS server. Adding the storing and updating of operating systems to the DNS server would substantially degrade network performance.

1227. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Bandaru with one of Nishiyama, Criss, and Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Bandaru.

1228. For at least the reasons described in this section, Bandaru combined with any of Nishiyama, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

4. Claims 1-4, 7, and 8 of the '930 Patent are not invalid in view of Bandaru in combination with one of Elgamal or RFC 2246, and one of Criss or Kottapurath, alone or further in combination with Nishiyama

1229. Dr. Johnson asserts: "Bandaru, in Combination with One or More of Elgamal, RFC 2246, Criss, Kottapurath, Nishiyama, and Hoyle, Invalidates the Asserted Claims of the '930 Patent." Johnson ¶718. As has already been discussed in Section XII, a POSITA, as defined by Dr. Johnson, would most likely not have been skilled in Criss or Nishiyama, and would

not have been able to combine either of those with anything. Furthermore, as has also been discussed in detail, there would be no motivation to combine any of Elgamal, RFC 2246, Nishiyama, Criss, or Kottapurath with Bandaru, and Dr. Johnson has not provided any compelling reason to do so. And has also already been discussed, combining Bandaru with Kottapurath would require substantial work and undue experimentation.

i. Claim [1.d] security information comprising authentication information for a first remote server system

1230. Dr. Johnson admits that Bandaru does not disclose authentication: "Bandaru does not disclose the use of client-server security and authentication within that system." Johnson ¶734. A POSITA would first note that the words "authenticate," and "authentication" do not appear anywhere in Bandaru. Furthermore, no related terms appear in Bandaru such as "password," "security," "confidential," or "login." This is a strong indicator that these technologies were not even envisioned by Bandaru.

1231. As with claim 2 of the '573 Patent, Dr. Johnson suggests a POSITA would combine Elgamal or TLS (RFC 2246) with Bandaru to achieve authentication. Johnson ¶¶735-742. Dr. Johnson merely states: "Although Bandaru discloses a client-server system that includes a first remote server system distributing image data to a client, Bandaru does not disclose the use of client-server security and authentication within that system" but that the concept of client-server authentication within such systems was well known as of the earliest filing date of the '930 Patent, as shown by Elgamal and RFC 2246 (TLS 1.0)." Johnson ¶735.

1232. Though Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Bandaru. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶737-740. Dr. Johnson then

states: "Furthermore, a POSITA would have been motivated to combine Bandaru with the security and device authentication features, including the security handshaking and use of server certificates, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and to authenticate the devices within Bandaru's client-server (e.g., DMF-DMF network service) image distribution system." Johnson ¶742.

1233. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[104] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[105] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1234. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

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[104] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[105] *Id.*

1235. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

1236. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1237. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

d. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

e. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

f. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

g. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

h. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1238. Even as of today, no authentication is needed to retrieve an image from an internet server.

1239. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1240. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1241. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1242. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would

be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1243. See also Section XIII.A.2 regarding the '573 Patent, claim 2.

1244. For at least the reasons described in this section, Bandaru alone or in combination with Elgamal or RFC 2246 does not anticipate or render obvious this claim limitation.

ii. Claim [1.e] and a unique identifier for said digital display apparatus,

1245. Dr. Johnson seems to admit that Bandaru does not explicitly teach this claim limitation, but asserts that "Bandaru discloses that the DMF network services includes a user profile database that stores the images added, deleted, selected, and/or subscribed to by the user within the user's profile as the corresponding DMF's default configuration, which necessarily requires a unique identifier for the corresponding DMF within the database." Johnson ¶745.

1246. While databases do require identifiers, the user profile database would only potentially require a unique identifier for the user (although Bandaru does not even disclose that), and not for the DMF device. Dr. Johnson goes on to assert: "For example, the DMF network services would need to maintain a mapping of DMFs in remote locations with user profiles maintained by the server to know to which DMFs the profiles correspond." Johnson ¶745. Again, Dr. Johnson seems to be at least tacitly acknowledging that Bandaru does not actually disclose this limitation. Furthermore, nothing in Bandaru even suggests any maintaining of a mapping of DMFs. Bandaru is also quite clear: the profiles described are user profiles, not DMF profiles.

1247. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that each DMF "may be assigned a unique identification when the DMF is manufactured." Bandaru II at 15:37-39. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the

Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate using a unique identifier.

1248. Dr. Johnson then attempts to combine Nishiyama with Bandaru. As I explain throughout this report, Dr. Johnson ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[106] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[107] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

1249. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18). Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Bandaru, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

[106] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[107] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

1250. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

1251. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

1252. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶752. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server,[108] and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

[108] *See, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier.").

1253. For Dr. Johnson's combination of Bandaru with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Bandaru with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

1254. Suggesting that Bandaru needs or would benefit from Elgamal or RFC 2246 ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1255. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[109] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[110] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

[109] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[110] *Id.*

1256. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1257. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

1258. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1259. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1260. Even as of today, no authentication is needed to retrieve an image from an internet server.

1261. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1262. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1263. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1264. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1265. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iii. Claim [1.f] and a current version of onboard software;

1266. Dr. Johnson makes the statement: "Although Bandaru does not expressly disclose that the operating system, or onboard software, of the DMF is stored *within* its memory." Johnson ¶758 (emphasis added). Dr. Johnson then states:

> Furthermore, it would have been obvious to a POSITA to store a current version of the operating system or onboard software of the DMF to allow the system to work properly. It was well known to a POSITA that software, such as operating system software or other onboard may have different versions that are released over time as the software is updated. A version currently stored in the DMF is the current version. A POSITA would have also recognized that the current version may be the latest version, and a POSITA would have been motivated to store the latest version of the onboard software in the DMF to provide the DMF with the latest feature set and bug fixes.

Johnson ¶759.

1267. It appears that Dr. Johnson is admitting that this limitation is not actually disclosed in Bandaru. Dr. Johnson then assumes that Bandaru is meant to support software updates, which are not disclosed in Bandaru. Dr. Johnson then further assumes that Bandaru facilitates software updates by storing a version number, which is also not disclosed in Bandaru. In addition to basing assumptions upon assumptions, Dr. Johnson also ignores other ways software can be updated including:

a. Simply installing the latest version over whatever is already on the device, regardless of what version it is; and

b. Simply using the date stamp of the file and updating if something with a later date stamp is available.

1268. Assumptions predicated upon yet other assumptions do not render a claim limitation obvious. Finally, Dr. Johnson mentions that: "Bandaru, alone or in combination with Nishiyama, Criss, or Kottapurath, discloses that said memory comprises a current version of onboard software," but offers no support from these other references or any other explanation regarding these references as to why there would be any motivation to modify Bandaru based on these three references.

1269. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iv. Claim [1.j] a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, [1.k] said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications [1.l] and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files;

1270. For these claim limitations, Dr. Johnson refers back to his discussion of claims 2 of the '573 Patent. Johnson ¶¶778-784. Although Dr. Johnson breaks these elements up in his report, in my opinion, the full context of the claim element matters. As I explained regarding claim 2 of the '573 Patent, Dr. Johnson simply ignores the "automatically" requirement of this claim limitation.

1271. Dr. Johnson states:

> When a user reconfigures, or initially configures, the user's corresponding DMF via the DMF network service web interface, the DMF network service creates the package data (user profile) containing the image data and user preferences defining

> the configuration. See Bandaru at 10:40-11:1. A POSITA would also have understood that the DMF network service relays the package data within the user profile containing image data and user preferences to the DMF device as information needed to complete the transaction of reconfiguring the user's DMF, e.g., where the DMF uses information contained within the user profile to configure its display. See Bandaru at 9:60-10:5, 10:6-29, 10:30-39, 10:40-11:1, 12:6-28, 13:16-23; 13:41-51, FIGS. 5-13.

Johnson ¶603.

1272. What is noticeably absent from Dr. Johnson's report, and from Bandaru, is any indication that any of this occurs *automatically*.

1273. Dr. Johnson also refers back to his report regarding claim 1, where, in paragraph 568 of his report, he states:

> Moreover, Bandaru discloses that after the user uses the PC to request DMF network service, "DMF network service 1058 provides services directly to DMF 1052 after it receives the request." *Id.* at 12:22-24; see also *id.* at 4:1-17 (describing capture and transfer of image data from Internet servers to DMF in FIG. 2).

Johnson ¶568.

1274. First, Dr. Johnson is taking this language out of context. The "request" described at 12:22-24 of Bandaru is initiated by a user:

- "To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service 1058." Bandaru at 12:3-5.
- "Once DMF network service 1058 is initiated, it allows the user to use the services." Bandaru at 12:7-9.
- "PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050." Bandaru at 12:21-26.

1275. As shown above, the "request" pointed to by Dr. Johnson is not automatic nor made by a digital display apparatus, but is initiated manually by a user and via PC 1050. Bandaru's process is thus not automatic. It is done manually when the user sends a request.

1276. Dr. Johnson goes on to point to various elements of Bandaru he believes are requests for images. But none of the portions he cites are automatic. Rather, they are manual. It should also be noted that the word "automatic" does not appear in Bandaru.

1277. Bandaru does not explain exactly how a DMF receives images associated with the DMF. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other functionality of the two-way program is described. Bandaru merely describes that images are "forwarded" from a device such as a PC to the DMF:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion.

Bandaru at 3:31-41.

1278. Similarly, the claims of Bandaru only describe that images are "forwarded," "transmitted," or "provided to" the DMF. Bandaru simply does not disclose an automatic request/response communication protocol.

1279. Dr. Johnson appears to admit this in paragraph 573 of his report when he asserts: "To the extent Bandaru does not expressly disclose that the user's preferences and image data are periodically relayed by the DMF server system to the DMF, it is my opinion that it would have been obvious to a POSITA for the DMF server system to periodically relay such images and preferences to the DMF as periodic updates for advertisements, weather, stock trading news,

headline news, daily news summaries, and interactive online gambling and consistent with the subscribed image data categories."

1280. However, most of the information Dr. Johnson points to in Bandaru is merely textual information, including weather, stocks, headlines, interactive gambling (part of the interactive section 826), Bandaru at 11:34-40, and advertisements, are, as shown in FIG. 8 of Bandaru, below, textual (i.e., not images) information provided as part of textural representation 808. This is made even more clear in figure 8 of Bandaru:

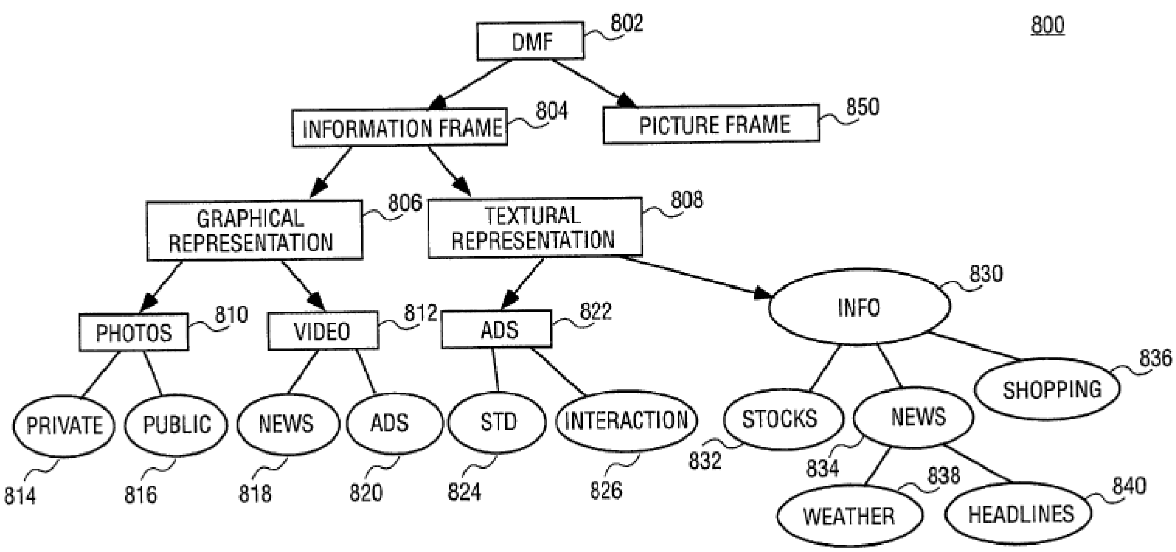

FIG. 8

1281. Dr. Johnson is conflating information from 830 with pictures from 850.

1282. The modes are described as: "While in the pictorial mode of DMF displays a sequence of predefined pictures, the information mode of DMP displays a set of information or data such as news, financial data, and the like." Bandaru at 9:50-53 (Note: DMP is in Bandaru, but I assume this is a typo and should read DMF).

1283. Bandaru goes on to further describe a financial mode: "Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, such categories can include news, sports, entertainment, financial data, et cetera." Bandaru at 9:63-65.

1284. Also, Bandaru simply does not disclose any periodic or automatic relay of images. Even if one agrees with Dr. Johnson that relaying of information such as "advertisements, weather, stock trading news, headline news, daily news summaries, and interactive gambling" would be periodic, there is no description in Bandaru of how the transmission of such data would occur, given Bandaru is silent regarding any periodic or automatic relay of any data. This claim element requires that the periodic relay of data is in response to a request, and, given Bandaru does not disclose anything regarding periodic or automatic relay of images, there is no suggestion of any request being made by the DMF. Data can be transmitted in various ways, such as a server push. Bandaru simply does not disclose or suggest the specific claim language of this claim element.

1285. Dr. Johnson then refers to the portion of Bandaru, again, regarding the different devices that can communicate with the DMF services: "In one embodiment, a user may use the telephone 1054 to initiate DMF network service 1058. Once DMF network service 1058 is initiated, it allows the user to use the services, such as reconfiguration of DMF. For example, when DMF 1052 needs to be reconfigured, DMF network services 1058 supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052. It should be noted that communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:6-11.

1286. Dr. Johnson also points to Bandaru at 12:15-20. Johnson ¶608. That excerpt from Bandaru states: "In another embodiment, a request for DMF network Service 1058 from DMF

1052 can be initiated via a direct connection. A direct connection is a cable or a modem that is directly connected between DNS 1059 and DMF 1052. The Internet 1056 can be an alternative connection between DNS 1059 and DMF 1052."

1287. Nothing in that section discloses, or even suggests anything occurring automatically. Aside from the fact that the terms "automatic" and "automatically" do not appear anywhere in Bandaru, a POSITA would understand that Bandaru actually teaches away from such automatic activity.

1288. The term "modem" is one that a POSITA would be very familiar with, and in fact most lay persons would be familiar with. Modems are not even always connected. One initiates a connection for a particular period of time, then ends that connection. Without an automatic initiation of communication, one could not have any automatic transmission.

1289. Again, a user utilizing a telephone or web page to manually conduct some activity is not *automatic*. Furthermore, Bandaru is again quite clear on the type of connection he contemplated: "Network-communicating device 710 may be a modem or a cordless modem, such as a cellular modem. In one embodiment, network-communicating device 710 is a one-way transmitting device, such as a pager type of one-way communication device. In another embodiment, network-communicating device 710 is a two-way communicating device, which may facilitate an interactive communication between devices. In one embodiment, DMF 701 uses a cellular modem to communicate with PC 712, DMF 714, and entity 716 or DMF Server 720." Bandaru at 10:20-29.

1290. As shown above, Bandaru even contemplates a cellular modem. Bandaru was issued on December 26, 2006, and filed on October 16, 2001. Anyone using a cellular device in that time frame would know that one had to pay for every minute of usage. Doing anything

automatically would use up time and increase the cost of the cellular plan. It is therefore unsurprising that Bandaru does not disclose doing anything automatically.

1291. Dr. Johnson also refers in his report to a portion of Bandaru disclosing that a user can add an image to the DMF by moving the corresponding icon or thumbnail from a global storage to the DMF storage. Johnson ¶576. A POSITA would again understand that this is an entirely manual process; it does not involve sending image data in response to a display apparatus *automatically* issuing a request.

1292. Dr. Johnson also, rather inexplicably, discusses a DMF doing some level of configuration automatically. Again, I first note that the term "automatic" does not appear in Bandaru. Setting that to one side, at most, what Dr. Johnson is pointing to is about configuring the DMF device, not about automatically requesting and sending image data.

1293. Dr. Johnson attempts to bolster his assertion stating: "For example, as discussed above, it would have been obvious for the DMF to automatically issue a request for image data corresponding to a subscription installment to the DMF network service (e.g., according to a client pull model), in accordance with periodic time intervals specified by the subscription." Johnson ¶578.

1294. I first note that "subscription installment" does not appear in Bandaru. In *one* place, Bandaru states that a user can subscribe to categories of images. Bandaru at 10:44-50. Bandaru also does not disclose a "client pull model." Nothing in the description in Bandaru discloses or suggests automatically requesting images by the DMF. Rather, Bandaru simply discloses that one can have specific categories of images one is interested in.

1295. Also, Bandaru does not disclose or suggest receiving in response to said request for image data "a set of data from said first remote server system comprising one or more image data files."

1296. Dr. Johnson asserts: "a POSITA would have understood that the user profile managed by the DMF server includes image data of the images added by the user…" because the user profile in Bandaru "stores the selected categories or websites." Johnson ¶¶597-598. However, as I have explained regarding the other claim elements, nothing in Bandaru suggests that the user profile would contain image data; Bandaru only discloses that the DMF server and user profile store *selected categories or websites*, Bandaru at 10:51-60, that is, merely "references" and not actual images. Bandaru at 14:6-7 (claim 1). The term "user profile" appears 16 times in Bandaru. Bandaru refers to a user profile database, Bandaru at 10:42-43, 10:58-64, 12:1-5, user profile storing categories, Bandaru at 10:52-56, user profile being related to a menu. Bandaru 13:18-23. But none of these portions of Bandaru disclose, or even suggest, that the user profile contains any actual image data.

1297. Bandaru specifically states: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059, server 1050, or server 1062. To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through DMF network service 1058." Bandaru at 12:1-5. A POSITA would immediately recognize that if the user profiles can be physically located on a DNS server, they would not contain image data. This becomes clear when one considers what a DNS server does.

1298. The Lab notes for Rice University Comp 321: Introduction to Computer Systems, state:

> IP addresses are difficult for humans to remember, so the Domain Name System (DNS) is used to provide a mapping between easy to remember textual domain

> names (sometimes simply called hostnames) and IP addresses. A domain name consists a hierarchical sequence of textual labels that are separated by dots, with the right-most label identifying the top-level domain for the name. For example, rice.edu, cs.rice.edu, and www.cs.rice.edu are all examples of different domain names that belong to the edu top-level domain. The name rice.edu refers to the rice subdomain of edu, the name cs.rice.edu refers to the cs subdomain of rice.edu, and the name www.cs.rice.edu refers to the www subdomain of cs.rice.edu. Other top-level domain names include com, org, and net.[111]

1299. Every time one visits a web page, or sends an email, the DNS server must be consulted in order to retrieve the IP address of the target server. This means that DNS servers tend to get a very large amount of traffic. Storing image data on such a server would be a serious mistake as it would take up substantial storage space on the server, and would unduly tax traffic to the server. If, however, a user profile is just some information about a user, and does not contain image data, then storing the profile on a DNS server would not be contraindicated.

1300. Not only does Bandaru not disclose the user profile including image data, but a POSITA would understand that attempting to include image data with the user profile would render some embodiments of Bandaru untenable. My analysis here also applies to the other claim elements regarding "a user interface . . . configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system," as, again, Bandaru does not disclose storing actual image data on its DMF server.

1301. While Dr. Johnson repeats the assertion that the user profile in Bandaru contains image data, Johnson ¶¶598-599. Bandaru does not actually disclose the user profile containing image data.

1302. There are standard internet servers from which a user can *retrieve* images. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color

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[111] https://www.clear.rice.edu/comp321/html/laboratories/lab11/

assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1303. A POSITA would readily understand that there is no way for Bandaru's DMF server to cause various internet servers to generate a set of data comprising image data files.

1304. A POSITA would further understand that the DMF server of Bandaru stores user profiles, but does not store images. I note that Dr. Johnson does not cite any part of Bandaru that discloses images being on the DMF server.

1305. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that a DMF can "synchronize with the DMF network on a periodic basis" to upload "to the DMF network objects that were loaded into the DMF from the external devices" and to download "to the DMF objects that . . . have not been sent to the DMF." Bandaru II at 16:33-60. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate the DMF and server performing periodic and automatic connections/communications to receive images. This feature was apparently never contemplated by Bandaru until after the Patents-in-Suit.

1306. See also Section XIII.A.2. regarding claim 2 of the '573 Patent.

1307. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

v. Claim [1.m] an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system;

1308. For this claim limitation, Dr. Johnson again refers mainly to his analysis with respect to claim 2 of the '573 Patent. As was stated in reference to the '573 Patent previously, a POSITA would first note that the words "authenticate" and "authentication" do not appear anywhere in Bandaru. Furthermore, no related terms appear in Bandaru such as "password," "security," "confidential," or "login." This is a strong indicator that these technologies were not even envisioned by Bandaru.

1309. Regarding authentication, Dr. Johnson merely states: "Bandaru discloses a device-server (e.g., client-server) system for distributing image data. However, to the extent that Bandaru does not disclose the use of client-server authentication within that system, the concept of client-server authentication within such systems was well known as of the earliest filing date of claim 2 of the '573 Patent, including as described in U.S. Patent No. 5,657,390 to Elgamal, and TLS 1.0, which was published as RFC 2246." Johnson ¶618.

1310. Though Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Bandaru. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶619-624, 786-788. Dr. Johnson then states: "Furthermore, a POSITA, as of the earliest filing date of the '573 Patent, would have been motivated to combine Bandaru with the security and device authentication features, including the security handshaking prior to the transfer of data, disclosed in Elgamal and/or RFC 2246 to ensure data security and integrity and authenticate the server within Bandaru's client-server (e.g.,

DMF-DMF network service) image distribution system. A POSITA would have also been motivated to make this combination to ensure network security on frame devices by requiring the device to authenticate the server to ensure that the device is communicating with the correct server before accepting data from the server." Johnson ¶626.

1311. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[112] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[113] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1312. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

[112] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[113] *Id.*

1313. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

1314. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1315. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1316. Even as of today, no authentication is needed to retrieve an image from an internet server.

1317. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1318. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1319. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1320. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would

be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1321. Dr. Johnson states: “The combination of Elgamal with Bandaru is a combination of prior art elements according to known methods to yield predictable result.” Johnson ¶630. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Bandaru. Second, as has been pointed out, Bandaru would not benefit from such a combination. A combination of Bandaru with Elgamal or TLS would not be simple or predictable.

1322. Dr. Johnson points repeatedly to Bandaru’s discussing a photo for “private use” to infer a need for authentication and security in Bandaru (Bandaru 11:21-24). However, Bandaru does not disclose what this means. Dr. Johnson seems to conflate private use with a user’s private photos. However, Bandaru says very little on the matter. There are only two sentences in Bandaru devoted to this topic: “Photo portion 810 can be further divided into private block 814 and public block 816. Private block 814 refers to individual photos, for example, an individual creates a photograph for private use” (Bandaru 11: 21-24). However, Figure 8 of Bandaru does elucidate this issue:

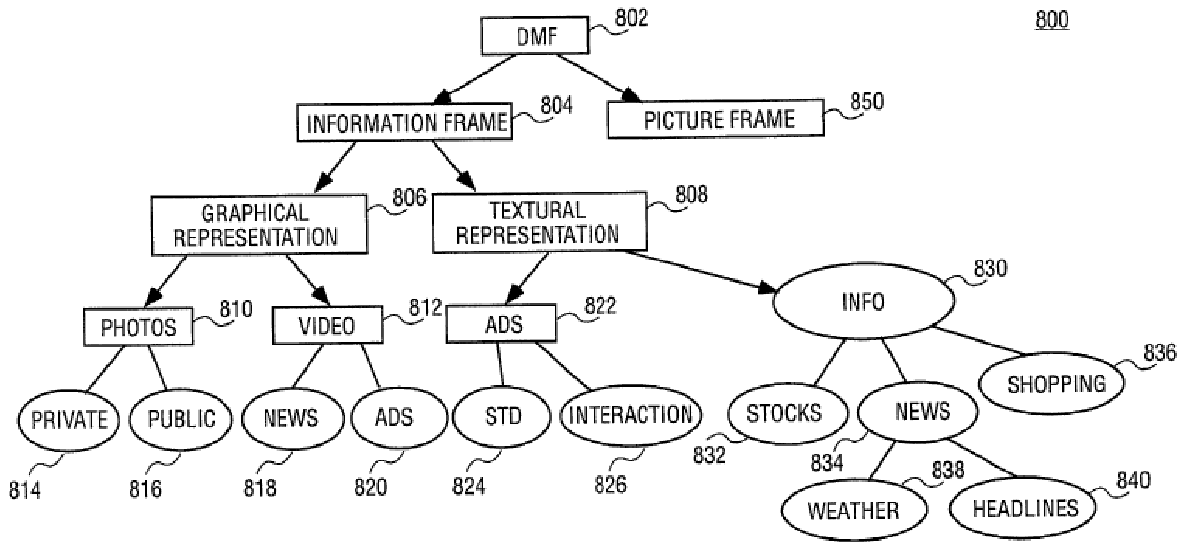

FIG. 8

1323. A POSITA would immediately see that block 814 is related to the photos 810 which are part of the graphical representation 806 of the information frame 804. A POSITA would see that this is referring to information that happens to contain a photo and setting aside that photo for private use. This does not refer to the user's private photos or even to the picture frame 850.

1324. See also Section XII.A.2. regarding claim 2 of the '573 Patent.

1325. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

vi. Claim [1.n] a software update function configured to obtain an updated version of said onboard software from said server [1.o] and to replace said current version of said onboard software in said memory with said updated version.

1326. For this claim limitation, Dr. Johnson again refers to and reuses his analysis regarding the ’573 Patent, asserting that Bandaru could be combined with one of Nishiyama, Criss, or Kottapurath to provide software updates. Johnson ¶ ¶791-800.

1327. I also note that, as Claim 1 of the ’930 Patent also recites authentication, to attempt to reach all claim elements of Claim 1 of the ’930 Patent, Dr. Johnson is combining three or more prior art references together, which a POSITA would recognize starts to become untenable. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

1328. Dr. Johnson states: “Although Bandaru does not expressly disclose a method or process by which the DMF obtains an update of the DMF’s operating system software from the DMF network service, the concept of updating the operating system of a device from a server system was a well-known method for managing client-server systems before the earliest filing date of the ’573 Patent.” Johnson ¶655.

1329. I do agree with Dr. Johnson that Bandaru does not disclose any method or process to obtain an update.

1330. Dr. Johnson combines, in the alternative, each of Nishiyama, Criss, and Kottapurath with Bandaru in an attempt to meet this claim element. However, it should be also noted that none of Nishiyama, Criss, and Kottapurath are in the same field of endeavor as the Patents-in-Suit: personal digital display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital display devices required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital display device design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

1331. Dr. Johnson first discusses Nishiyama. Johnson ¶ ¶657-658. However, the very section that Dr. Johnson points to in Nishiyama belies his interpretation. Dr. Johnson points to "Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20." Nishiyama at 36:6-8. This portion of Nishiyama states:

> 1-3-5. Remote Maintenance of Software of Terminal System 30 1. Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20.
>
> Note: when commercially-available remote-access software is used, terminal systems 30 for installing software can be specified.

Nishiyama at 36:4-11.

Nishiyama, 36:4-11.

1332. Nishiyama thus similarly discloses that remote maintenance can be performed on terminal systems by installing, modifying, updating, and maintaining the software via the network under control of the server using "commercially-available remote-access software." Nishiyama at 36:4-11. However, while Nishiyama discloses that software of terminals can be remotely updated, Nishiyama states this is done using "remote-access software," indicating software updates are installed from the server using such remote-access software. However, this claim element recites that the display apparatus obtains an update for its onboard, indicating it initiates the request, not that the server remotely accesses the display apparatus to install updates.

1333. As indicated above, Dr. Johnson also ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[114] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[115] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*. Nishiyama is thus not in the same field of endeavor as the Patents-in-Suit because Nishiyama is directed to providing video advertisements to public displays/billboards, whereas the Patents-in-Suit are in the field of consumer digital display devices.

1334. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's

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[114] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[115] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. A review of undergraduate computer science courses offered at Rice University,[116] where Dr. Johnson is a professor, shows not even a single course in Interactive Video Systems, or any video system at all. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Nishiyama.

1335. Using Dr. Johnson's own definition of a POSITA, it is clear that such a POSITA would not be capable of combining Nishiyama with any other art.

1336. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine Criss with Bandaru. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Bandaru. Criss is related to managing cellular networks, not to the field of consumer digital display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are

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116 https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

1337. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" a host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

1338. The claim requires the at least one digital display apparatus obtain software updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the digital display apparatus simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." *See*, *e.g.*, '930 Patent at 5:10-21 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Bandaru, this combination would not reach the claims of the Patents-in-Suit.

1339. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶663-664. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND

DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Bandaru than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

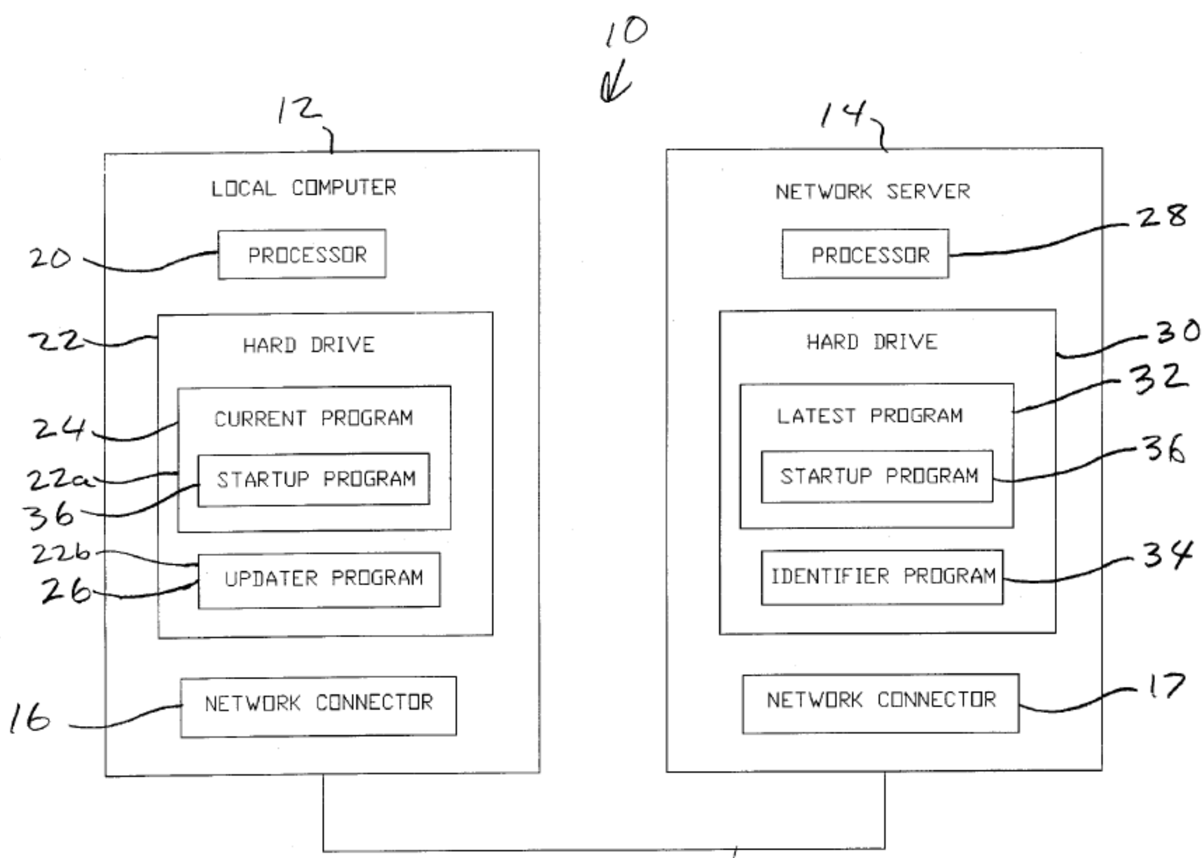

Fig. 1

1340. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Bandaru. Figure 3 of Kottapurath shows the process:

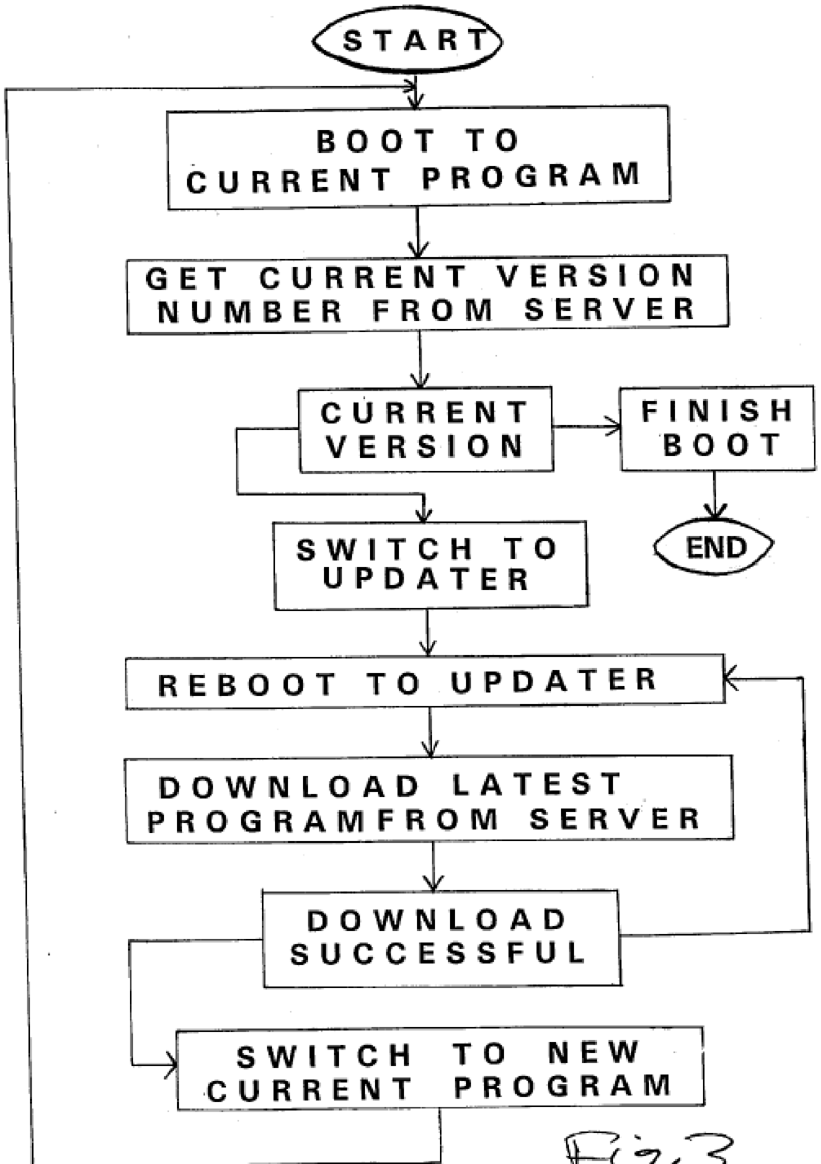

Fig. 3

1341. Dr. Johnson then states: "A POSITA, as of the earliest filing date of the '573 Patent, would have been motivated to combine the software update functions described in Nishiyama, Criss, and/or Kottapurath with Bandaru's client-server system (DMF-DMF network service) to

provide DMF software updates through a central DMF network service." Johnson ¶665. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF somehow to obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

1342. Dr. Johnson is quite clear in where he believes updates will come from: "Moreover, it would have been obvious to a POSITA that the operating system software update could be obtained from the same server system that relays image data and preferences to the frame device." Johnson ¶674. However, this is flawed. The only possible server in Bandaru that might be used is the DMF server which has a user profile database. As has been pointed out, adding any additional tasks to this server is very problematic: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059. Server 1050, or server 1062." Bandaru at 12:1-3. Bandaru contemplates having the user profile database/DMF network service on a DNS server. Adding the storing and updating of software to the DNS server would substantially degrade network performance.

1343. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Bandaru with one of Nishiyama, Criss, and Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Bandaru.

1344. See also Section XIII.A.3. regarding claim 19 of the '573 Patent.

1345. For at least the reasons described in this section, Bandaru alone or in combination with Nishiyama, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

vii. Claim [2.] The digital display apparatus of claim 1, wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system.

1346. Dr. Johnson states: "Bandaru, alone or in combination with Nishiyama, Elgamal, or RFC 2246, discloses a unique identifier for said digital display apparatus," and generally uses the same arguments as with respect to the unique identifier element of Claim 1 of the '930 Patent. Johnson ¶¶801-808.

1347. As was stated in reference to claim 1 of the 930 patent, Dr. Johnson seems to admit that Bandaru does not explicitly teach this claim limitation, but asserts that "Bandaru discloses that the DMF network services includes a user profile database that stores the images added, deleted, selected, and/or subscribed to by the user within the user's profile as the corresponding DMF's default configuration, which necessarily requires a unique identifier for the corresponding DMF within the database." Johnson ¶745.

1348. While databases do require identifiers, the user profile database would only potentially require a unique identifier for the user (although Bandaru does not even disclose that), and not for the DMF device. Dr. Johnson goes on to assert: "For example, the DMF network services would need to maintain a mapping of DMFs in remote locations with user profiles maintained by the server to know to which DMFs the profiles correspond." Johnson ¶745. Again, Dr. Johnson seems to be at least tacitly acknowledging that Bandaru does not actually disclose this limitation. Furthermore, nothing in Bandaru even suggests any maintaining of a mapping of DMFs. Bandaru is also quite clear: the profiles described are user profiles, not DMF profiles.

1349. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that each DMF "may be assigned a unique identification when the DMF is manufactured." Bandaru II at 15:37-39. This

disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate using a unique identifier.

1350. Dr. Johnson then attempts to combine Nishiyama with Bandaru. As I explain throughout this report, Dr. Johnson ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[117] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[118] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

1351. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been

[117] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[118] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

motivated to combine Nishiyama and Bandaru, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

1352. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

1353. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

1354. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶752. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a

communication handshake with a server,[119] and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

1355. For Dr. Johnson's combination of Bandaru with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Bandaru with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

1356. Suggesting that Bandaru needs or would benefit from Elgamal or RFC 2246 ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1357. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[120] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[121] Given those challenges still existed in

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[119] *See, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier.").

[120] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[121] *Id.*

2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1358. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1359. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

1360. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1361. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1362. Even as of today, no authentication is needed to retrieve an image from an internet server.

1363. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1364. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1365. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key.

Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1366. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1367. See also Section XIII.A.4 regarding Claim 1 of the '930 Patent.

1368. For at least the reasons described in this section, Bandaru alone or in combination with Nishiyama, Elgamal, or RFC 2246 does not anticipate or render obvious this claim limitation.

viii. Claim [3.] The digital display apparatus of claim 2, wherein said authentication function is further configured to provide device authentication information to said first remote server system prior to obtaining image data from said first remote server system.

1369. Dr. Johnson states: "Bandaru in combination with Elgamal or RFC 2246 discloses an authentication function configured to authenticate said first remote server system (e.g., the DMF network service) prior to accepting said set of data from said first remote server system." Johnson ¶810.

1370. I first note that Dr. Johnson states: "prior to accepting said set of data." The claim limitation is not just for any set of data, but explicitly image data. As has been discussed several times in this report, the DMF network server or service does not provide the image data.

1371. Bandaru is quite clear: on where image data comes from: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks."

Bandaru at 3:1-4. Bandaru does not get image data from the DMF service. Furthermore, no authentication is needed for digital cameras, video cameras, computers, telephone lines, television cables. As has been discussed previously in this report, one can download images from web servers without authentication.

1372. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1373. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg
b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg
c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg
d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1374. Even as of today, no authentication is needed to retrieve an image from an internet server.

1375. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1376. Furthermore, again in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1377. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1378. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would

be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1379. Dr. Johnson also attempts to combine Nishiyama with Bandaru for this element. As I explain throughout this report, Dr. Johnson ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[122] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[123] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

1380. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Bandaru, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

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[122] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[123] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

1381. See also Sections XIII.A.4.i. to XIII.A.4.vi. regarding claim 1 of the ’930 Patent.

1382. Finally, Dr. Johnson points to the same portions of the references he alleged taught the unique identifier in claims 1 and 2 of the ’930 Patent and thus that the alleged “unique identifier” of these references is also the device authentication information in Claim 3 of the ’930 Patent. Claim 2, from which Claim 3 depends, already recites “wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system.” Therefore, in light of the principles of claim differentiation, Claim 3 must be referring to device authentication information other than the unique identifier, and thus Dr. Johnson has failed to show this element.

1383. For at least the reasons described in this section, Bandaru alone or in combination with Nishiyama, Elgamal, or RFC 2246 does not anticipate or render obvious this claim limitation.

ix. Claim [4.] The digital display apparatus of claim 1, wherein said onboard software further comprises an initialization function configured to prompt said first remote server system to associate a record with said digital display apparatus.

1384. For this claim limitation Dr. Johnson points to user profiles in Bandaru. Johnson ¶818. However, these are associated with a specific user not a specific display apparatus. There is also no disclosure in Bandaru of an initialization function performed by the DMF that prompts a server system to associate a record.

1385. Dr. Johnson then states: “It would have been obvious to a POSITA, as of the earliest filing date of the ’930 Patent, that the DMF server (i.e., the first remote server system) associates the user profile (i.e., the record) with the DMF because the user profile can be used as a default configuration for the DMF.” Johnson ¶820.

1386. Dr. Johnson then cites Bandaru “PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services

directly to DMF 1052 after it receives the request." Johnson ¶821. This citation belies Dr. Johnson's interpretation. As I explained in this report previously, POSITA would understand that a request from a PC would be a manual request initiated by a user, and thus there would be no initialization operation executed by a *digital display apparatus*, as claimed.

1387. Dr. Johnson then cites another section of Bandaru: "other methods of requesting DMF network service 1058 are possible." Johnson ¶821. The full quote from Bandaru cited by Dr. Johnson is as follows:

> PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050. It should be noted that other methods of requesting DMF network service 1058 are possible, but they are not necessary to understanding the present invention.

Bandaru at 12: 21-28.

1388. A POSITA would note that not only are no other methods of requesting DMF network service described.

1389. Dr. Johnson also states:

> The applicant described the "initialization function" as involving the frame device "initializ[ing] with the system in order to have the capability to obtain image data." '930 Patent at 23:52-54. A POSITA would have recognized the request for DMF network services as such a function because it similarly allows the DMF to initiate a connection with the DMF server prior to the user providing input via the DMF webpage to configure the DMF and subsequently obtain image data.

Johnson ¶822.

1390. Again, as I explained in Section XIII.A. of this report, Dr. Johnson is conflating the profile information of the DMF network services with image data that is not retrieved from the DMF network server/services. And again, Bandaru explains that setting up user profiles requires a manual user process. The passage cited by Dr. Johnson from the '930 Patent, which he leaves out from his citation, provides that:

> The initialization process begins at step 800 when the frame device is connected to a power Source and a communication medium such as a telephone line or network connection. The frame device may be configured to automatically connect via a wireless connection or the user may manually couple it to a power source and communication medium.
>
> . . .
>
> At step 805, the data repository is analyzed to d to determine whether there is a record for the frame device initiating the connection. If a record for the frame device is not located, step 807 executes and an image prompting the user to create a picture box account associated with that frame device is displayed to the user.
>
> . . .
>
> Once the picture box is obtained, step 813 executes, at step 813 the behavior characteristics of the frame device is determined. The behavior characteristics may be established by default or customized according to the user's preferences. When the behavior characteristics are determined, step 815 executes. At step 815, the invention contemplates loading the behavior characteristics into the data repository for use by the frame device.

'930 Patent at 23:59-65, 24:9-16, 24:39-46.

1391. Therefore, the initialization function as described, for example, in this portion of the '930 Patent refers to an automatic initialization process carried out by the display apparatus to ensure the user has a record associated with the remote server system, which is not disclosed in Bandaru.

1392. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

x. Claim [7] The digital display apparatus of claim 1, wherein said memory comprises a connection timing parameter that indicates a timing interval for said digital display apparatus to automatically initiate periodic connections with said first remote server system.,

1393. A POSITA would first note that timing is never mentioned in Bandaru.

1394. Dr. Johnson states: "For example, the user in Bandaru can use the DMF web page to select categories of images for subscription as well commercially available websites, such as

stock market news, sports, and weather channels, to view on the DMF." Johnson ¶833. However, as I have described elsewhere in this report, nothing in that quote from Bandara discloses or suggests any timing, and especially not that a connection timing parameter is stored in the DMF of Bandaru.

1395. Dr. Johnson then states: "A POSITA would have recognized, as of the earliest filing date of the '930 Patent, that the DMF would need to occasionally connect to the DMF server to obtain new images, updated weather information, stock quotes, and the like. Moreover, it would have been obvious to allow the user to configure when and how often this connection occurs, such as a periodic frequency. " Johnson¶834.

1396. First, Dr. Johnson supposes one would need to "occasionally connect to the DMF server to obtain new images, updated weather information, stock quotes, and the like." However, as has been pointed out repeatedly in this report, the DMF does not obtain those items from the DMF server.

1397. Dr. Johnson then adds an additional supposition, assuming that a user can configure the frequency of this operation. This is a supposition on top of other suppositions. It also ignores many other ways the DMF could update information, the simplest being that when the DMF is turned on to update information, or when the user requests an update.

1398. Dr. Johnson then turns his attention to Criss. Dr. Johnson first ignores the fact that Criss is in an entirely separate field than Bandaru. The primary USPTO classification for Criss is 455, Telecommunications. The subcategory is 418 or Programming control. USPTO primary classification for Bandaru is 715/748. Class 715 is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is

User interactive multicomputer data transfer (e.g., file transfer).[124] These are entirely different fields.

1399. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Telecommunications, the primary field of Criss. Nor does Dr. Johnson's description of a POSITA indicate any skill in mobile devices, which are mentioned 129 times in Criss.

1400. It is more likely than not that a POSITA, as defined by Dr. Johnson, could not combine Criss with anything, including Bandaru.

1401. At any rate, Dr. Johnson points out that Criss discloses "a software update schedule table" stored by a cellular device so that it can obtain updates via a cellular network. Johnson ¶835 (citing Criss at 2:64-3:5). Dr. Johnson then makes a conclusory statement that "a POSITA would have been motivated to combine the software update schedule described in Criss with Bandaru's client-server system (DMF-DMF network service) to allow the DMF to periodically connect to the server to fetch new information, such as DMF software updates." Johnson ¶837. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF somehow to obtain periodic software updates. There is no problem(s) in Bandaru that would motivate a POSITA to modify Bandaru with Criss.

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[124] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

1402. For at least the reasons described in this section, Bandaru alone or in combination with Criss does not anticipate or render obvious this claim limitation.

xi. Claim [8.] The digital display apparatus of claim 1, wherein said memory comprises an image display parameter comprising a timing interval for periodically selecting an image data file from said memory for rendering on said display region.

1403. This claim is not met for at least the same reasons as I explained with respect to Claim 1.

1404. For at least the reasons described in this section, Bandaru alone or in combination with Criss does not anticipate or render obvious this claim limitation.

5. Claims 5, 6, and 15 of the '930 Patent are not invalid in view of Bandaru in combination with Hoyle, and one of Elgamal or RFC 2246, and one of Criss or Kottapurath, alone or further in combination with Nishiyama

1405. I note that, since Claim 15 is dependent from Claim 11, Claim 15 includes all the elements of Claim 11.

i. Claim [5.] The digital display apparatus of claim 1, wherein said digital display apparatus is configured to display an account initialization message.

1406. Dr. Johnson admits that "Bandaru does not expressly disclose wherein said digital display apparatus is configured to display an account initialization message," but asserts that "it would have been obvious to a POSITA, as of the earliest filing date of the '930 Patent, to include a display function configured to display an account initialization message such as that found in Hoyle." Johnson ¶824.

1407. I first note that I agree with Dr. Johnson that Bandaru does not expressly disclose this claim limitation. I next note that Dr. Johnson asserts that Hoyle discloses that "a targeted

advertisement display system may be configured to display a message asking of the user would like to set up a new account." Johnson ¶825 (citing Hoyle at 26:49-27).

1408. Dr. Johnson then states: "a POSITA would have found it obvious that the DMF of Bandaru could display an account initialization message similarly to the computer running targeted advertising software described in Hoyle."

1409. Even if one were to agree with Dr. Johnson that a POSITA *could* make this combination, Dr. Johnson provides no reason why a POSITA *would*. All Dr. Johnson points to is the fact that Hoyle discloses displaying an account initialization message when a user creates a new account. However, Dr. Johnson does not provide any reason why this would benefit Bandaru. Bandaru already has a DMF web page that can be used to specify profiles. Adding an additional step from Hoyle would simply make the combined device less user friendly by requiring unnecessary steps. Dr. Johnson provides no clear arguments why a POSITA would actually be motivated to modify Bandaru in this way, nor in what part of Bandaru's process this step would be practically performed.

1410. For at least the reasons described in this section, Bandaru alone or in combination with Hoyle does not anticipate or render obvious this claim limitation.

ii. Claim [6.] The digital display apparatus of claim 5, wherein said account initialization message prompts a user to create an account with said first remote server system.

1411. I first note that Dr. Johnson states: "Although Bandaru does not expressly disclose wherein said account initialization message prompts a user to create an account with said first remote server system." Johnson ¶829. I agree with Dr. Johnson that Bandaru does not disclose this claim limitation.

1412. As with claim 5, Dr. Johnson first supposes that a POSITA could combine Bandaru with Hoyle, then supposes that said POSITA would be motivated to do so. However, Dr. Johnson

does not articulate how this would improve Bandaru. And as discussed in reference to claim 5 above, such a combination would actually detract from Bandaru.

1413. I also should point out that Claims 5 and 6 depend from Claim 1, and thus require all the elements of Claim 1. Thus, to attempt to reach Claims 5 and 6, Dr. Johnson has now added Hoyle to the three or more reference combinations asserted against claim 1. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

1414. For at least the reasons described in this section, Bandaru alone or in combination with Hoyle does not anticipate or render obvious this claim limitation.

iii. Claim [11.d] security information comprising authentication information for a first remote server system

1415. For this element, Dr. Johnson merely refers back to the same arguments he presented for Claim 1 of the ’930 Patent. Johnson ¶858.

1416. As has been discussed in detail in this report, Bandaru does not disclose authentication and would not have benefited from any combination with Elgamal or RFC 2246.

1417. Dr. Johnson admits that Bandaru does not disclose authentication: “Bandaru does not disclose the use of client-server security and authentication within that system.” Johnson ¶734. A POSITA would first note that the words “authenticate” and “authentication” do not appear

anywhere in Bandaru. Furthermore, no related terms appear in Bandaru such as "password," "security," "confidential," or "login." This is a strong indicator that these technologies were not even envisioned by Bandaru.

1418. As with claim 2 of the '573 Patent, Dr. Johnson suggests a POSITA would combine Elgamal or TLS (RFC 2246) with Bandaru to achieve authentication. Johnson ¶735-742 Dr. Johnson merely states: "Although Bandaru discloses a client-server system that includes a first remote server system distributing image data to a client, Bandaru does not disclose the use of client-server security and authentication within that system" but that the concept of client-server authentication within such systems was well known as of the earliest filing date of the '930 Patent, as shown by Elgamal and RFC 2246 (TLS 1.0)." Johnson ¶735.

1419. Though Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Bandaru. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶737-740. Dr. Johnson then states: "Furthermore, a POSITA would have been motivated to combine Bandaru with the security and device authentication features, including the security handshaking and use of server certificates, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and to authenticate the devices within Bandaru's client-server (e.g., DMF-DMF network service) image distribution system." Johnson ¶742.

1420. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop

computers).[125] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[126] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1421. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1422. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

1423. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In

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[125] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[126] *Id.*

one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1424. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1425. Even as of today, no authentication is needed to retrieve an image from an internet server.

1426. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1427. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to

server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1428. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1429. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1430. See also Section XII.A.2 regarding the '573 Patent, claim 2, and Sections XIII.A.4.i. to XIII.A.4.vi. regarding the '930 Patent, claim 1.

1431. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iv. Claim [11.e] and a unique identifier for said digital display apparatus,

1432. For this element, Dr. Johnson merely refers back to the same arguments he presented for Claim 1 of the '930 Patent. Johnson ¶859.

1433. Dr. Johnson seems to admit that Bandaru does not explicitly teach this claim limitation, but asserts that "Bandaru discloses that the DMF network services includes a user

profile database that stores the images added, deleted, selected, and/or subscribed to by the user within the user's profile as the corresponding DMF's default configuration, which necessarily requires a unique identifier for the corresponding DMF within the database." Johnson ¶745.

1434. While databases do require identifiers, the user profile database would only potentially require a unique identifier for the user (although Bandaru does not even disclose that), and not for the DMF device. Dr. Johnson goes on to assert: "For example, the DMF network services would need to maintain a mapping of DMFs in remote locations with user profiles maintained by the server to know to which DMFs the profiles correspond." Johnson ¶745. Again, Dr. Johnson seems to be at least tacitly acknowledging that Bandaru does not actually disclose this limitation. Furthermore, nothing in Bandaru even suggests any maintaining of a mapping of DMFs. Bandaru is also quite clear: the profiles described are user profiles, not DMF profiles.

1435. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that each DMF "may be assigned a unique identification when the DMF is manufactured." Bandaru II at 15:37-39. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate using a unique identifier.

1436. Dr. Johnson then attempts to combine Nishiyama with Bandaru. As I explain throughout this report, Dr. Johnson ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[127] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display*

[127] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

Processing. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[128] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

1437. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Bandaru, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

1438. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server***

[128] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> ***uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

1439. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

1440. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶752. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server,[129] and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

1441. For Dr. Johnson's combination of Bandaru with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Bandaru with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

1442. Suggesting that Bandaru needs or would benefit from Elgamal or RFC 2246 ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers,

[129] *See, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier.").

telephone lines, television cables, and Internet servers or other types of networks." (Bandaru 3:1-4). Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1443. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[130] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[131] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1444. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1445. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

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[130] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[131] *Id.*

1446. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1447. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1448. Even as of today, no authentication is needed to retrieve an image from an internet server.

1449. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1450. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1451. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1452. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1453. See also Sections XIII.A.4.i. to XIII.A.4.vi. regarding claim 1 of the '930 Patent.

1454. For at least the reasons stated in this section, Bandaru alone or in combination with Nishiyama, Elgamal, or RFC 2246 does not anticipate or render obvious this claim limitation.

v. Claim [11.f] and onboard software;

1455. For this element, Dr. Johnson merely refers back to the same arguments he presented for Claim 1 of the '930 Patent. Johnson ¶860.

1456. Dr. Johnson makes the statement: "Although Bandaru does not expressly disclose that the operating system, or onboard software, of the DMF is stored *within* its memory." Johnson ¶758 (emphasis original). Dr. Johnson then states:

> Furthermore, it would have been obvious to a POSITA to store a current version of the operating system or onboard software of the DMF to allow the system to work properly. It was well known to a POSITA that software, such as operating system software or other onboard may have different versions that are released over time as the software is updated. A version currently stored in the DMF is the current version. A POSITA would have also recognized that the current version may be the latest version, and a POSITA would have been motivated to store the latest version of the onboard software in the DMF to provide the DMF with the latest feature set and bug fixes.

Johnson ¶759.

1457. It appears that Dr. Johnson is admitting that this limitation is not actually disclosed in Bandaru. Dr. Johnson then assumes that Bandaru is meant to support software updates, which are not disclosed in Bandaru. Dr. Johnson then further assumes that Bandaru facilitates software updates by storing a version number, which is also not disclosed in Bandaru. In addition to basing assumptions upon assumptions, Dr. Johnson also ignores other ways software can be updated including:

a. Simply installing the latest version over whatever is already on the device, regardless of what version it is; and

b. Simply using the date stamp of the file and updating if something with a later date stamp is available.

1458. Assumptions predicated upon yet other assumptions do not render a claim limitation obvious. Finally, Dr. Johnson mentions that: "Bandaru, alone or in combination with Nishiyama, Criss, or Kottapurath, discloses that said memory comprises a current version of

onboard software," but offers no support from these other references or any other explanation regarding these references as to why there would be any motivation to modify Bandaru based on these three references.

1459. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

vi. Claim [11.j] based on a value of said image display parameter; and

1460. Dr. Johnson asserts that this claim limitation is met by Bandaru and cites Bandaru: "After receiving the image data, the display controller 342 generates the image display code in response to the image data and the auxiliary information. The display unit 350, subsequently, receives display codes for images from the display controller 342 and displays the image. In one embodiment, the display controller 342 stores a set of display code in the memory buffer 344. In another embodiment, the display controller 342 stores the display code in the non-volatile memory 332 or DRAM 330."

1461. Dr. Johnson is quite clear that he is positing the display code of Bandaru to be the display parameter. Johnson ¶866. However, Dr. Johnson is overlooking the complete claim limitation which is "an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region based on a value of said image display parameter." It is not merely that there exists some display parameter, but that the "image display function is configured to obtain image data…based on a value of said image display parameter."

1462. A POSITA would recognize that even in the section of Bandaru that Dr. Johnson cites, the display controller generates the image display code ***after receiving the image*** (Emphasis

added). Therefore, it is not possible that "image display function is configured to obtain image data…***based on a value of said image display parameter***" (Emphasis added).

1463. For at least the reasons stated in this section, Bandaru does not anticipate or render obvious this claim limitation.

vii. Claim [11.k] a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, [11.l] said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications [11.m] and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files

1464. For this element, Dr. Johnson merely refers back to the same arguments he presented for Claim 1 of the '930 Patent. Johnson ¶¶870-872.

1465. Although Dr. Johnson breaks these elements up in his report, in my opinion, the full context of the claim element matters. As I explained regarding claim 2 of the '573 Patent, Dr. Johnson simply ignores the "automatically" requirement of this claim limitation.

1466. Dr. Johnson states:

> When a user reconfigures, or initially configures, the user's corresponding DMF via the DMF network service web interface, the DMF network service creates the package data (user profile) containing the image data and user preferences defining the configuration. See Bandaru at 10:40-11:1. A POSITA would also have understood that the DMF network service relays the package data within the user profile containing image data and user preferences to the DMF device as information needed to complete the transaction of reconfiguring the user's DMF, e.g., where the DMF uses information contained within the user profile to configure its display. See Bandaru at 9:60-10:5, 10:6-29, 10:30-39, 10:40-11:1, 12:6-28, 13:16-23; 13:41-51, FIGS. 5-13.

Johnson ¶603.

1467. What is noticeably absent from Dr. Johnson's report, and from Bandaru, is any indication that any of this occurs *automatically*.

1468. Dr. Johnson also refers back to his report regarding claim 1, where, in paragraph 568 of his report, he states:

> Moreover, Bandaru discloses that after the user uses the PC to request DMF network service, "DMF network service 1058 provides services directly to DMF 1052 after it receives the request." *Id.* at 12:22-24; see also *id.* at 4:1-17 (describing capture and transfer of image data from Internet servers to DMF in FIG. 2).

Johnson ¶568.

1469. First, Dr. Johnson is taking this language out of context. The "request" described at 12:22-24 of Bandaru is initiated by a user:

- "To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service 1058." Bandaru at 12:3-5.
- "Once DMF network service 1058 is initiated, it allows the user to use the services." Bandaru at 12:7-9.
- "PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050." Bandaru at 12:21-26.

1470. As shown above, the "request" pointed to by Dr. Johnson is not automatic nor made by a digital display apparatus, but is initiated manually by a user and via PC 1050. Bandaru's process is thus not automatic. It is done manually when the user sends a request.

1471. Dr. Johnson goes on to point to various elements of Bandaru he believes are requests for images. But none of the portions he cites are automatic. Rather, they are manual. It should also be noted that the word "automatic" does not appear in Bandaru.

1472. Bandaru does not explain exactly how a DMF receives images associated with the DMF. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other

functionality of the two-way program is described. Bandaru merely describes that images are "forwarded" from a device such as a PC to the DMF:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion.

Bandaru at 3:31-41.

1473. Similarly, the claims of Bandaru only describe that images are "forwarded," "transmitted," or "provided to" the DMF. Bandaru simply does not disclose an automatic request/response communication protocol.

1474. Dr. Johnson appears to admit this in paragraph 573 of his report when he asserts: "To the extent Bandaru does not expressly disclose that the user's preferences and image data are periodically relayed by the DMF server system to the DMF, it is my opinion that it would have been obvious to a POSITA for the DMF server system to periodically relay such images and preferences to the DMF as periodic updates for advertisements, weather, stock trading news, headline news, daily news summaries, and interactive online gambling and consistent with the subscribed image data categories."

1475. However, most of the information Dr. Johnson points to in Bandaru is merely textual information, including weather, stocks, headlines, interactive gambling (part of the interactive section 826), Bandaru at 11:34-40, and advertisements, are, as shown in FIG. 8 of Bandaru, below, textual (i.e., not images) information provided as part of textural representation 808. This is made even more clear in figure 8 of Bandaru:

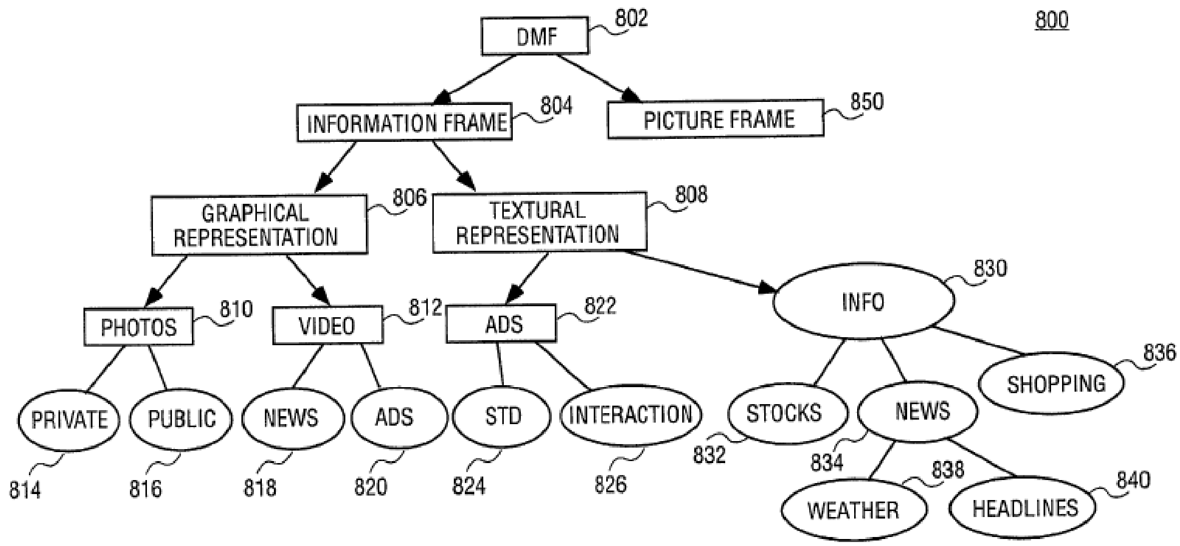

FIG. 8

1476. Dr. Johnson is conflating information from 830 with pictures from 850.

1477. The modes are described as: "While in the pictorial mode of DMF displays a sequence of predefined pictures, the information mode of DMP displays a set of information or data such as news, financial data, and the like." Bandaru at 9:50-53. (Note: DMP is in Bandaru, but I assume this is a typo and should read DMF).

1478. Bandaru goes on to further describe a financial mode: "Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, such categories can include news, sports, entertainment, financial data, et cetera." Bandaru at 9:63-65.

1479. Also, Bandaru simply does not disclose any periodic or automatic relay of images. Even if one agrees with Dr. Johnson that relaying of information such as "advertisements, weather, stock trading news, headline news, daily news summaries, and interactive gambling" would be

periodic, there is no description in Bandaru of how the transmission of such data would occur, given Bandaru is silent regarding any periodic or automatic relay of any data. This claim element requires that the periodic relay of data is in response to a request, and, given Bandaru does not disclose anything regarding periodic or automatic relay of images, there is no suggestion of any request being made by the DMF. Data can be transmitted in various ways, such as a server push. Bandaru simply does not disclose or suggest the specific claim language of this claim element.

1480. Dr. Johnson then refers to the portion of Bandaru, again, regarding the different devices that can communicate with the DMF services: "In one embodiment, a user may use the telephone 1054 to initiate DMF network service 1058. Once DMF network service 1058 is initiated, it allows the user to use the services, such as reconfiguration of DMF. For example, when DMF 1052 needs to be reconfigured, DMF network services 1058 supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052. It should be noted that communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:6-11.

1481. Dr. Johnson also points to Bandaru at 12:15-20. Johnson ¶608. That excerpt from Bandaru states: "In another embodiment, a request for DMF network Service 1058 from DMF 1052 can be initiated via a direct connection. A direct connection is a cable or a modem that is directly connected between DNS 1059 and DMF 1052. The Internet 1056 can be an alternative connection between DNS 1059 and DMF 1052."

1482. Nothing in that section discloses, or even suggests anything occurring automatically. Aside from the fact that the terms "automatic" and "automatically" do not appear anywhere in Bandaru, a POSITA would understand that Bandaru actually teaches away from such automatic activity.

1483. The term "modem" is one that a POSITA would be very familiar with, and in fact most lay persons would be familiar with. Modems are not even always connected. One initiates a connection for a particular period of time, then ends that connection. Without an automatic initiation of communication, one could not have any automatic transmission.

1484. Again, a user utilizing a telephone or web page to manually conduct some activity is not *automatic*. Furthermore, Bandaru is again quite clear on the type of connection he contemplated: "Network-communicating device 710 may be a modem or a cordless modem, such as a cellular modem. In one embodiment, network-communicating device 710 is a one-way transmitting device, such as a pager type of one-way communication device. In another embodiment, network-communicating device 710 is a two-way communicating device, which may facilitate an interactive communication between devices. In one embodiment, DMF 701 uses a cellular modem to communicate with PC 712, DMF 714, and entity 716 or DMF Server 720." Bandaru at 10:20-29.

1485. As shown above, Bandaru even contemplates a cellular modem. Bandaru was issued on December 26, 2006, and filed on October 16, 2001. Anyone using a cellular device in that time frame would know that one had to pay for every minute of usage. Doing anything automatically would use up time and increase the cost of the cellular plan. It is therefore unsurprising that Bandaru does not disclose doing anything automatically.

1486. Dr. Johnson also refers in his report to a portion of Bandaru disclosing that a user can add an image to the DMF by moving the corresponding icon or thumbnail from a global storage to the DMF storage. Johnson ¶576. A POSITA would again understand that this is an entirely manual process; it does not involve sending image data in response to a display apparatus *automatically* issuing a request.

1487. Dr. Johnson also, rather inexplicably, discusses a DMF doing some level of configuration automatically. Again, I first note that the term "automatic" does not appear in Bandaru. Setting that to one side, at most, what Dr. Johnson is pointing to is about configuring the DMF device, not about automatically requesting and sending image data.

1488. Dr. Johnson attempts to bolster his assertion stating: "For example, as discussed above, it would have been obvious for the DMF to automatically issue a request for image data corresponding to a subscription installment to the DMF network service (e.g., according to a client pull model), in accordance with periodic time intervals specified by the subscription." Johnson ¶578.

1489. I first note that "subscription installment" does not appear in Bandaru. In *one* place, Bandaru states that a user can subscribe to categories of images. Bandaru at 10:44-50. Bandaru also does not disclose a "client pull model." Nothing in the description in Bandaru discloses or suggests automatically requesting images by the DMF. Rather, Bandaru simply discloses that one can have specific categories of images one is interested in.

1490. Also, Bandaru does not disclose or suggest receiving in response to said request for image data "a set of data from said first remote server system comprising one or more image data files."

1491. Dr. Johnson asserts: "a POSITA would have understood that the user profile managed by the DMF server includes image data of the images added by the user…" because the user profile in Bandaru "stores the selected categories or websites." Johnson ¶¶597-598. However, as I have explained regarding the other claim elements, nothing in Bandaru suggests that the user profile would contain image data; Bandaru only discloses that the DMF server and user profile store *selected categories or websites*, Bandaru at 10:51-60, that is, merely "references" and not

actual images. Bandaru at 14:6-7 (claim 1). The term "user profile" appears 16 times in Bandaru. Bandaru refers to a user profile database, Bandaru at 10:42-43, 10:58-64, 12:1-5, user profile storing categories, Bandaru at 10:52-56, user profile being related to a menu. Bandaru 13:18-23. But none of these portions of Bandaru disclose, or even suggest, that the user profile contains any actual image data.

1492. Bandaru specifically states: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059, server 1050, or server 1062. To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through DMF network service 1058." Bandaru at 12:1-5. A POSITA would immediately recognize that if the user profiles can be physically located on a DNS server, they would not contain image data. This becomes clear when one considers what a DNS server does.

1493. The Lab notes for Rice University Comp 321: Introduction to Computer Systems, state:

> IP addresses are difficult for humans to remember, so the Domain Name System (DNS) is used to provide a mapping between easy to remember textual domain names (sometimes simply called hostnames) and IP addresses. A domain name consists a hierarchical sequence of textual labels that are separated by dots, with the right-most label identifying the top-level domain for the name. For example, rice.edu, cs.rice.edu, and www.cs.rice.edu are all examples of different domain names that belong to the edu top-level domain. The name rice.edu refers to the rice subdomain of edu, the name cs.rice.edu refers to the cs subdomain of rice.edu, and the name www.cs.rice.edu refers to the www subdomain of cs.rice.edu. Other top-level domain names include com, org, and net.[132]

1494. Every time one visits a web page, or sends an email, the DNS server must be consulted in order to retrieve the IP address of the target server. This means that DNS servers tend to get a very large amount of traffic. Storing image data on such a server would be a serious mistake

[132] https://www.clear.rice.edu/comp321/html/laboratories/lab11/

as it would take up substantial storage space on the server, and would unduly tax traffic to the server. If, however, a user profile is just some information about a user, and does not contain image data, then storing the profile on a DNS server would not be contraindicated.

1495. Not only does Bandaru not disclose the user profile including image data, but a POSITA would understand that attempting to include image data with the user profile would render some embodiments of Bandaru untenable. My analysis here also applies to the other claim elements regarding "a user interface . . . configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system," as, again, Bandaru does not disclose storing actual image data on its DMF server.

1496. While Dr. Johnson repeats the assertion that the user profile in Bandaru contains image data, Johnson ¶¶598-599, Bandaru does not actually disclose the user profile containing image data.

1497. There are standard internet servers from which a user can *retrieve* images. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1498. A POSITA would readily understand that there is no way for Bandaru's DMF server to cause various internet servers to generate a set of data comprising image data files.

1499. A POSITA would further understand that the DMF server of Bandaru stores user profiles, but does not store images. I note that Dr. Johnson does not cite any part of Bandaru that discloses images being on the DMF server.

1500. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that a DMF can "synchronize with the DMF network on a periodic basis" to upload "to the DMF network objects that were loaded into the DMF from the external devices" and to download "to the DMF objects that . . . have not been sent to the DMF." Bandaru II at 16:33-60. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate the DMF and server performing periodic and automatic connections/communications to receive images. This feature was apparently never contemplated by Bandaru until after the Patents-in-Suit.

1501. See also Sections XIII.A.2. and XIII.A.5 regarding claim 2 of the '573 Patent and claims 1 and 7 of the '930 Patent.

1502. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

viii. Claim [11.n] an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system;

1503. For this element, Dr. Johnson merely refers back to the same arguments he presented for Claim 1 of the '930 Patent. Johnson ¶873.

1504. As was stated in reference to the '573 Patent previously, a POSITA would first note that the words "authenticate" and "authentication" do not appear anywhere in Bandaru.

Furthermore, no related terms appear in Bandaru such as "password," "security," "confidential," or "login." This is a strong indicator that these technologies were not even envisioned by Bandaru.

1505. Regarding authentication, Dr. Johnson merely states: "Bandaru discloses a device-server (e.g., client-server) system for distributing image data. However, to the extent that Bandaru does not disclose the use of client-server authentication within that system, the concept of client-server authentication within such systems was well known as of the earliest filing date of claim 2 of the '573 Patent, including as described in U.S. Patent No. 5,657,390 to Elgamal, and TLS 1.0, which was published as RFC 2246." Johnson ¶618.

1506. Though Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Bandaru. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶619-624, 786-788. Dr. Johnson then states: "Furthermore, a POSITA, as of the earliest filing date of the '573 Patent, would have been motivated to combine Bandaru with the security and device authentication features, including the security handshaking prior to the transfer of data, disclosed in Elgamal and/or RFC 2246 to ensure data security and integrity and authenticate the server within Bandaru's client-server (e.g., DMF-DMF network service) image distribution system. A POSITA would have also been motivated to make this combination to ensure network security on frame devices by requiring the device to authenticate the server to ensure that the device is communicating with the correct server before accepting data from the server." Johnson ¶626.

1507. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained

devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[133] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[134] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1508. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1509. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

1510. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet

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133 https://www.embedded.com/implementing-ssl-on-8-bit-micros/

134 *Id.*

address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1511. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1512. Even as of today, no authentication is needed to retrieve an image from an internet server.

1513. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1514. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to

server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1515. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1516. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1517. Dr. Johnson states: "The combination of Elgamal with Bandaru is a combination of prior art elements according to known methods to yield predictable result." Johnson ¶630. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Bandaru. Second, as has been pointed out, Bandaru would not benefit from such a combination. A combination of Bandaru with Elgamal or TLS would not be simple or predictable.

1518. Dr. Johnson points repeatedly to Bandaru's discussing a photo for "private use" to infer a need for authentication and security in Bandaru (Bandaru 11:21-24). However, Bandaru does not disclose what this means. Dr. Johnson seems to conflate private use with a user's private

photos. However, Bandaru says very little on the matter. There are only two sentences in Bandaru devoted to this topic: "Photo portion 810 can be further divided into private block 814 and public block 816. Private block 814 refers to individual photos, for example, an individual creates a photograph for private use" (Bandaru 11: 21-24). However, Figure 8 of Bandaru does elucidate this issue:

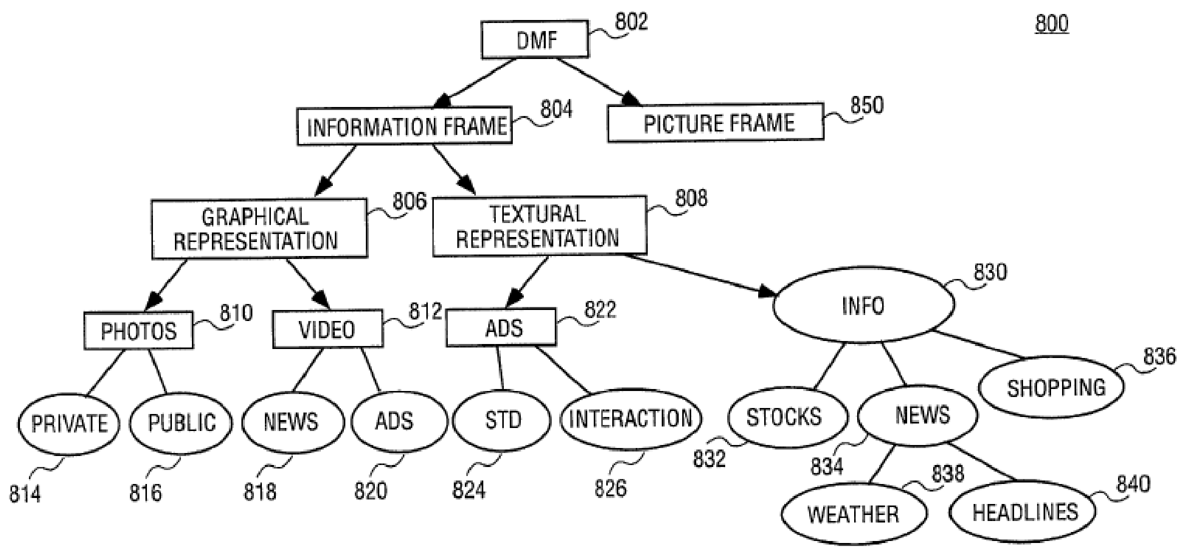

FIG. 8

1519. A POSITA would immediately see that block 814 is related to the photos 810 which are part of the graphical representation 806 of the information frame 804. A POSITA would see that this is referring to information that happens to contain a photo and setting aside that photo for private use. This does not refer to the user's private photos or even to the picture frame 850.

1520. See Sections XIII.A.1–2 and XIII.A.4 regarding Claim 2 and 6 of the '573 Patent, and claim 1 of the '930 Patent.

1521. For at least the reasons described in this section, Bandaru alone or in combination with Elgamal or RFC 2246 does not anticipate or render obvious this claim limitation.

ix. Claim [11.o] a software update function configured to obtain an updated version of said onboard software from said server and [11.p] to replace said current version of said onboard software in said memory with said updated version

1522. For this element, Dr. Johnson merely refers back to the same arguments he presented for Claim 1 of the ’930 Patent. Johnson ¶¶874-875.

1523. For this claim limitation, Dr. Johnson again refers to and reuses his analysis regarding the ’573 Patent, asserting that Bandaru could be combined with one of Nishiyama, Criss, or Kottapurath to provide software updates. Johnson ¶¶791-800.

1524. I also note that, as Claim 1 of the ’930 Patent also recites authentication, to attempt to reach all claim elements of Claim 1 of the ’930 Patent, Dr. Johnson is combining three or more prior art references together, which a POSITA would recognize starts to become untenable. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

1525. Dr. Johnson states: “Although Bandaru does not expressly disclose a method or process by which the DMF obtains an update of the DMF’s operating system software from the DMF network service, the concept of updating the operating system of a device from a server

system was a well-known method for managing client-server systems before the earliest filing date of the '573 Patent." Johnson ¶655.

1526. I do agree with Dr. Johnson that Bandaru does not disclose any method or process to obtain an update.

1527. Dr. Johnson combines, in the alternative, each of Nishiyama, Criss, and Kottapurath with Bandaru in an attempt to meet this claim element. However, it should be also noted that none of Nishiyama, Criss, and Kottapurath are in the same field of endeavor as the Patents-in-Suit: personal display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital devices required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital display device design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

1528. Dr. Johnson first discusses Nishiyama. Johnson ¶657-658. However, the very section that Dr. Johnson points to in Nishiyama belies his interpretation. Dr. Johnson points to "Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20." Nishiyama at 36:6-8. This portion of Nishiyama states:

> 1-3-5. Remote Maintenance of Software of Terminal System 30 1. Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20.
>
> Note: when commercially-available remote-access software is used, terminal systems 30 for installing software can be specified.

Nishiyama at 36:4-11.

1529. Nishiyama thus similarly discloses that remote maintenance can be performed on terminal systems by installing, modifying, updating, and maintaining the software via the network under control of the server using "commercially-available remote-access software." Nishiyama at 36:4-11. However, while Nishiyama discloses that software of terminals can be remotely updated, Nishiyama states this is done using "remote-access software," indicating software updates are installed from the server using such remote-access software. However, this claim element recites that the display apparatus obtains an update for its onboard, indicating it initiates the request, not that the server remotely accesses the display apparatus to install updates.

1530. As indicated above, Dr. Johnson also ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[135] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[136] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*. Nishiyama is thus not in the same field of endeavor as the Patents-in-Suit because Nishiyama is directed to providing video advertisements to public displays/billboards, whereas the Patents-in-Suit are in the field of consumer digital display apparatuses.

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[135] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[136] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

1531. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. A review of undergraduate computer science courses offered at Rice University,[137] where Dr. Johnson is a professor, shows not even a single course in Interactive Video Systems, or any video system at all. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Nishiyama.

1532. Using Dr. Johnson's own definition of a POSITA, it is clear that such a POSITA would not be capable of combining Nishiyama with any other art.

1533. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine Criss with Bandaru. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Bandaru. Criss is related to managing cellular networks, not to the field of consumer digital display apparatuses. Criss also does not address the problems described in the

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137 https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

1534. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

1535. However, this claim requires that the digital display apparatus obtain software updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the digital display apparatus simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." *See*, *e.g.*, '930 Patent at 5:10-21 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Bandaru, this combination would not reach the claims of the Patents-in-Suit.

1536. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶663-664. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Bandaru than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

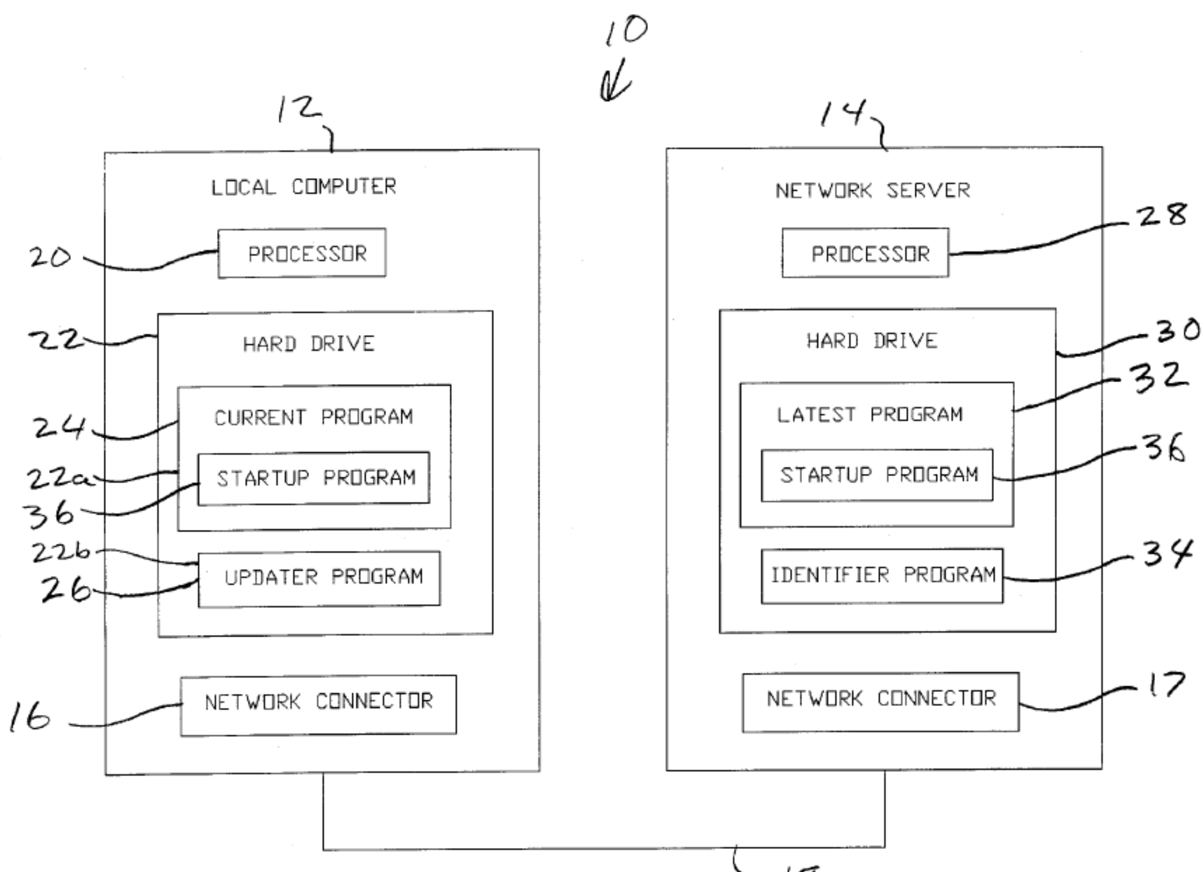

Fig. 1

1537. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Bandaru. Figure 3 of Kottapurath shows the process:

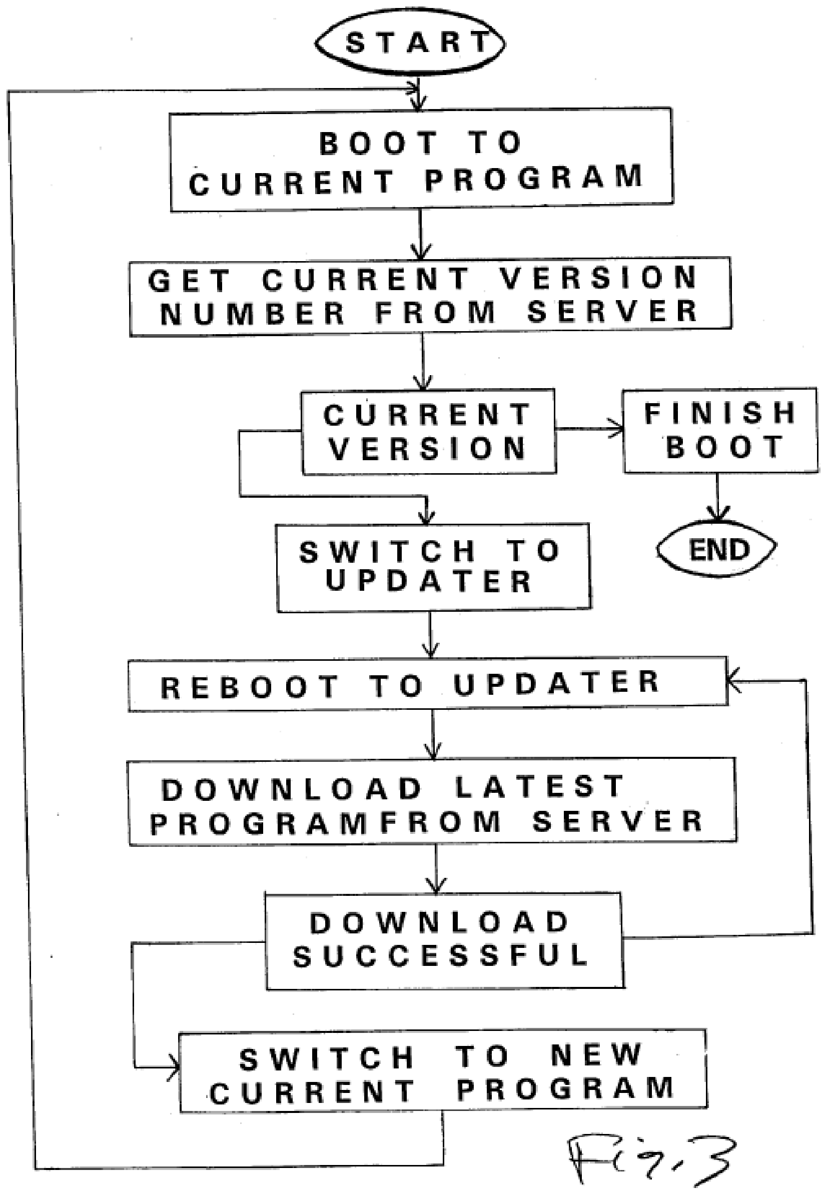

Fig. 3

1538. Dr. Johnson then states: "A POSITA, as of the earliest filing date of the '573 Patent, would have been motivated to combine the software update functions described in Nishiyama, Criss, and/or Kottapurath with Bandaru's client-server system (DMF-DMF network service) to

provide DMF software updates through a central DMF network service." Johnson ¶665. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF somehow to obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

1539. Dr. Johnson is quite clear in where he believes updates will come from: "Moreover, it would have been obvious to a POSITA that the operating system software update could be obtained from the same server system that relays image data and preferences to the frame device." Johnson ¶674. However, this is flawed. The only possible server in Bandaru that might be used is the DMF server which has a user profile database. As has been pointed out, adding any additional tasks to this server is very problematic: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059. server 1050, or server 1062." Bandaru at 12:1-3. Bandaru contemplates having the user profile database/DMF network service on a DNS server. Adding the storing and updating of software to the DNS server would substantially degrade network performance.

1540. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Bandaru with one of Nishiyama, Criss, and Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Bandaru.

1541. See also Sections XIII.A.3 and XIII.A.4 regarding claim 19 of the '573 Patent, and claim 1 of the '930 Patent.

1542. For at least the reasons described in this section, Bandaru alone or in combination with Nishiyama, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

x. Claim [15.] The digital display apparatus of claim 11 wherein said digital display apparatus is configured to display an account initialization message served from said server system.

1543. Dr. Johnson first states "Bandaru in combination with Hoyle discloses wherein said digital display apparatus is configured to display an account initialization message." Johnson ¶881.

1544. For this element, Dr. Johnson refers back to the same arguments he presented for Claim 5 of the '930 Patent. Johnson ¶¶874-875.

1545. Dr. Johnson admits that "Bandaru does not expressly disclose wherein said digital display apparatus is configured to display an account initialization message," but asserts that "it would have been obvious to a POSITA, as of the earliest filing date of the '930 Patent, to include a display function configured to display an account initialization message such as that found in Hoyle." Johnson ¶824.

1546. I first note that I agree with Dr. Johnson that Bandaru does not expressly disclose this claim limitation. I next note that Dr. Johnson asserts that Hoyle discloses that "a targeted advertisement display system may be configured to display a message asking of the user would like to set up a new account." Johnson ¶825 (citing Hoyle at 26:49-27).

1547. Dr. Johnson then states: "a POSITA would have found it obvious that the DMF of Bandaru could display an account initialization message similarly to the computer running targeted advertising software described in Hoyle."

1548. Even if one were to agree with Dr. Johnson that a POSITA *could* make this combination, Dr. Johnson provides no reason why a POSITA *would*. All Dr. Johnson points to is the fact that Hoyle discloses displaying an account initialization message when a user creates a new account. However, Dr. Johnson does not provide any reason why this would benefit Bandaru. Bandaru already has a DMF web page that can be used to specify profiles. Adding an additional step from Hoyle would simply make the combined device less user friendly by requiring

unnecessary steps. Dr. Johnson provides no clear arguments why a POSITA would actually be motivated to modify Bandaru in this way, nor in what part of Bandaru's process this step would be practically performed.

1549. Dr. Johnson also states: "Moreover, it would have been obvious to a POSITA, as of the earliest filing date of the '930 Patent, that the account initialization message would be served from the DMF server of Bandaru or the server of Hoyle. It would have been obvious to a POSITA to serve messages such as an account initialization message from a server because it was common to serve information from servers on the Internet and also to store account information in such servers." Johnson ¶882.

1550. If one were to agree with Dr. Johnson on this issue, and I do not, based on this reasoning, any server anywhere can serve account initialization messages.

1551. See also Sections XIII.A.5.i. to XIII.A.5.ii. regarding claims 5 and 6 of the '930 Patent.

1552. For at least the reasons described in this section, Bandaru alone or in combination with Hoyle does not anticipate or render obvious this claim limitation.

6. Claims 1, 2, and 5-8 of the '656 Patent are not invalid in view of Bandaru in combination with one of Elgamal or RFC 2246, and one of Criss, Kottapurath, or Kikinis

1553. Dr. Johnson asserts that Bandaru, in Combination with One or More of Elgamal, RFC 2246, Criss, Kottapurath, and Kikinis, Invalidates the Asserted Claims of the '656 Patent." Johnson ¶888.

i. Claim 1 [1.pre] A display device for displaying image data received from a server system comprising:

1554. For this element, Dr. Johnson refers back again to his analysis regarding element [1.a] of the '573 Patent, and asserts that Bandaru discloses an apparatus for displaying content

comprising image data received from a server system via a communications network on a display screen by generally alleging that the DMF of Bandaru receives images from the DMF server. Johnson ¶¶890–94.

1555. As I have explained in Section XIII.a., Bandaru does not meet this claim limitation. I also note that, to show image data received from a server system, Dr. Johnson points to a user profile database in Bandaru, stating: "the DMF is connected via an interconnection fabric (i.e., Internet 718) to the DMF server 720, which includes a repository (i.e., user profile database 724), from which it obtains images for display." Johnson ¶518.

1556. The user profile database 724 is mentioned only 5 times in Bandaru, and at no point is there any disclosure, or even suggestion that this user repository database also has images. Dr. Johnson points to Figure 7 of Bandaru, which I have reproduced here:

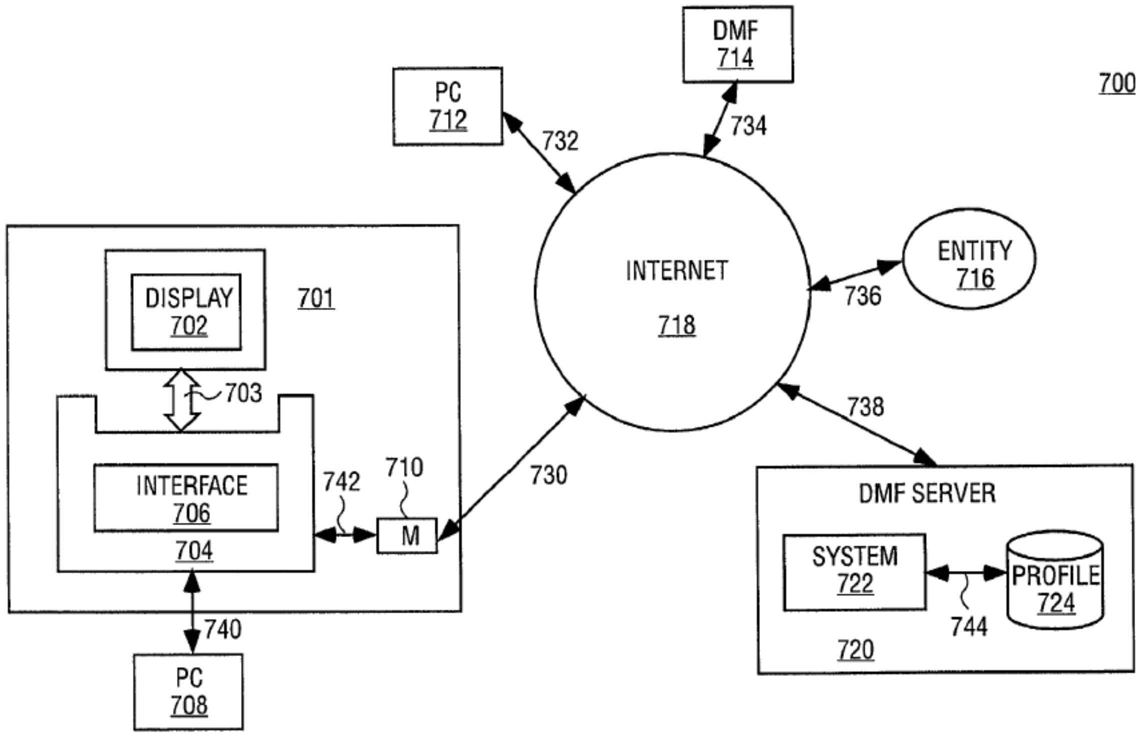

FIG. 7

1557. Neither the user profile database 724, the DMF server 720, or the System 722, are disclosed to provide images. Rather, Bandaru merely discloses that users can use a DMF network service provided by the DMF server 720, and that the DMF network service can be used to "subscribe" to "categories of images," or to "commercially available websites" to receive "stock market news, sports, and weather channels." Bandaru at 10:39-65. The user profile database 724 merely stores user profiles that reflect the selected categories. Bandaru at 10:52-56.

1558. Bandaru specifically discloses the following regarding the DMF server 720:

> "DMF server 720 is a network server that provides DMF network service for DMF devices connected to the network. In one embodiment, DMF server includes a system 722 and a user profile database 724. DMF network service provides user and data services, which can be used to configure DMF. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure

> or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:39-57.

1559. Thus, at most, the DMF server lists categories of images the user can subscribe to, but there is no disclosure or even a suggestion that these images are stored on the DMF server or in the user profile database, or that the DMF receives images from the DMF server.

1560. Rather, Bandaru discusses receiving image data in figure 5, shown here:

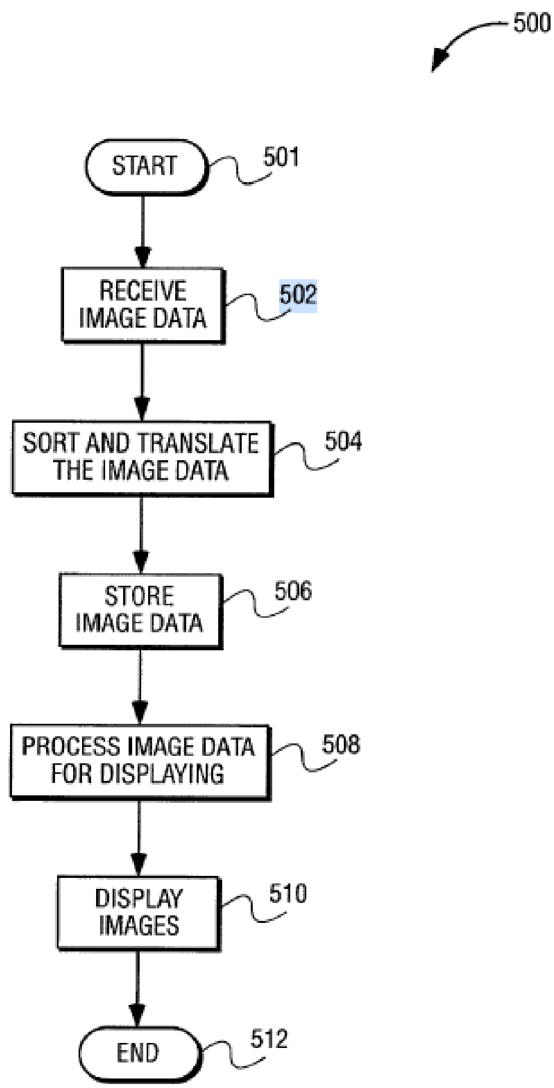

FIG. 5

1561. Bandaru explicitly states: "The process proceeds to block 502, where an interface unit of the DMF 400 receives the image data. The image data may be captured by image capturing devices, such as a digital or video camera." Bandaru at 8:1-4. Bandaru mentions that the DMF is "capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of

networks." Bandaru at 3:1-4. However, Bandaru does not disclose that the DMF server or the user profile database provide the images. Rather, Bandaru merely states that images can be received from an "Internet node," (i.e., some Internet connected source like a website that provides the website content) and that images received by the DMF can have an Internet address associated with the image that "indicates which Internet node was used for sending the image data to the DMF 102," including an "Internet address [that] links to other websites that are related to the image." Bandaru at 3:59-61, 4:18-34. But when referring to the DMF server and user profile database specifically, Bandaru merely discloses that the DMF server and user profile database are used to "configure" the DMF by allowing a user to subscribe to image "categories" or websites. Bandaru at 10:6-11:2.

1562. Bandaru thus does not disclose a server system from which the DMF receives images data, and thus Dr. Johnson's statement that the DMF meets this limitation of the '656 Patent is incorrect.

1563. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

ii. Claim [1(d)] a memory comprising computer readable instructions for controlling the operation of said display device,

1564. For this element, Dr. Johnson refers back to his analysis regarding Claim 1 of the '930 Patent. Johnson ¶¶904-907.

1565. Dr. Johnson makes the statement: "Although Bandaru does not expressly disclose that the operating system, or onboard software, of the DMF is stored *within* its memory." Johnson ¶758. Dr. Johnson then states:

> Furthermore, it would have been obvious to a POSITA to store a current version of the operating system or onboard software of the DMF to allow the system to work properly. It was well known to a POSITA that software, such as operating system software or other onboard may have different versions that are released over time

> as the software is updated. A version currently stored in the DMF is the current version. A POSITA would have also recognized that the current version may be the latest version, and a POSITA would have been motivated to store the latest version of the onboard software in the DMF to provide the DMF with the latest feature set and bug fixes.

Johnson ¶759.

1566. It appears that Dr. Johnson is admitting that this limitation is not actually disclosed in Bandaru. Dr. Johnson then assumes that Bandaru is meant to support software updates, which are not disclosed in Bandaru. Dr. Johnson then further assumes that Bandaru facilitates software updates by storing a version number, which is also not disclosed in Bandaru. In addition to basing assumptions upon assumptions, Dr. Johnson also ignores other ways software can be updated including:

a. Simply installing the latest version over whatever is already on the device, regardless of what version it is; and
b. Simply using the date stamp of the file and updating if something with a later date stamp is available.

1567. Assumptions predicated upon yet other assumptions do not render a claim limitation obvious. Dr. Johnson offers no support from the other references or any other explanation regarding the references as to why there would be any motivation to modify Bandaru based on these three references.

1568. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iii. Claim [1(e)] said computer readable instructions for controlling the operation of said display device comprising instructions for causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system, said communications session comprising the steps of:

1569. For this element, Dr. Johnson refers to his analysis with respect to claim 2 of the ’573 Patent and claim 1 of the ’930 Patent and their recitations regarding automatic communications. Johnson ¶909.

1570. As I explained regarding in Sections XIII.A.1-4, Dr. Johnson simply ignores the automatic nature of this claim element.

1571. Dr. Johnson states:

> When a user reconfigures, or initially configures, the user’s corresponding DMF via the DMF network service web interface, the DMF network service creates the package data (user profile) containing the image data and user preferences defining the configuration. See Bandaru at 10:40-11:1. A POSITA would also have understood that the DMF network service relays the package data within the user profile containing image data and user preferences to the DMF device as information needed to complete the transaction of reconfiguring the user’s DMF, e.g., where the DMF uses information contained within the user profile to configure its display. See Bandaru at 9:60-10:5, 10:6-29, 10:30-39, 10:40-11:1, 12:6-28, 13:16-23; 13:41-51, FIGS. 5-13.

Johnson ¶603.

1572. What is noticeably absent from Dr. Johnson’s report, and from Bandaru, is any indication that any of this occurs automatically, i.e., upon connection to a power source and a communications source ***and prior to receiving any input from a user***, as claimed.

1573. Dr. Johnson also refers back to his report regarding claim 1, where, in paragraph 568 of his report, he states:

> Moreover, Bandaru discloses that after the user uses the PC to request DMF network service, “DMF network service 1058 provides services directly to DMF 1052 after it receives the request.” *Id.* at 12:22-24; see also *id.* at 4:1-17 (describing capture and transfer of image data from Internet servers to DMF in FIG. 2).

Johnson ¶568.

1574. First, Dr. Johnson is taking this language out of context. The "request" described at 12:22-24 of Bandaru is initiated by a user:

- "To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service 1058." Bandaru at 12:3-5.
- "Once DMF network service 1058 is initiated, it allows the user to use the services." Bandaru at 12:7-9.
- "PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050." Bandaru at 12:21-26.

1575. As shown above, the "request" pointed to by Dr. Johnson is not automatic nor made by a display device prior to any user input, but is initiated manually by a user and via PC 1050. Bandaru's process is thus not automatic. It is done manually when the user sends a request.

1576. Dr. Johnson goes on to point to various elements of Bandaru he believes are requests for images. But none of the portions he cites are automatic. Rather, they are manual. It should also be noted that the word "automatic" does not appear in Bandaru.

1577. Bandaru does not explain exactly how a DMF receives images associated with the DMF. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other functionality of the two-way program is described. Bandaru merely describes that images are "forwarded" from a device such as a PC to the DMF:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a

> computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion.

Bandaru at 3:31-41.

1578. Similarly, the claims of Bandaru only describe that images are “forwarded,” “transmitted,” or “provided to” the DMF. Bandaru simply does not disclose an automatic request/response communication protocol.

1579. Dr. Johnson appears to admit this in paragraph 573 of his report when he asserts: “To the extent Bandaru does not expressly disclose that the user’s preferences and image data are periodically relayed by the DMF server system to the DMF, it is my opinion that it would have been obvious to a POSITA for the DMF server system to periodically relay such images and preferences to the DMF as periodic updates for advertisements, weather, stock trading news, headline news, daily news summaries, and interactive online gambling and consistent with the subscribed image data categories.”

1580. However, most of the information Dr. Johnson points to in Bandaru is merely textual information, including weather, stocks, headlines, interactive gambling (part of the interactive section 826), Bandaru at 11:34-40, and advertisements, are, as shown in FIG. 8 of Bandaru, below, textual (i.e., not images) information provided as part of textural representation 808. This is made even more clear in figure 8 of Bandaru:

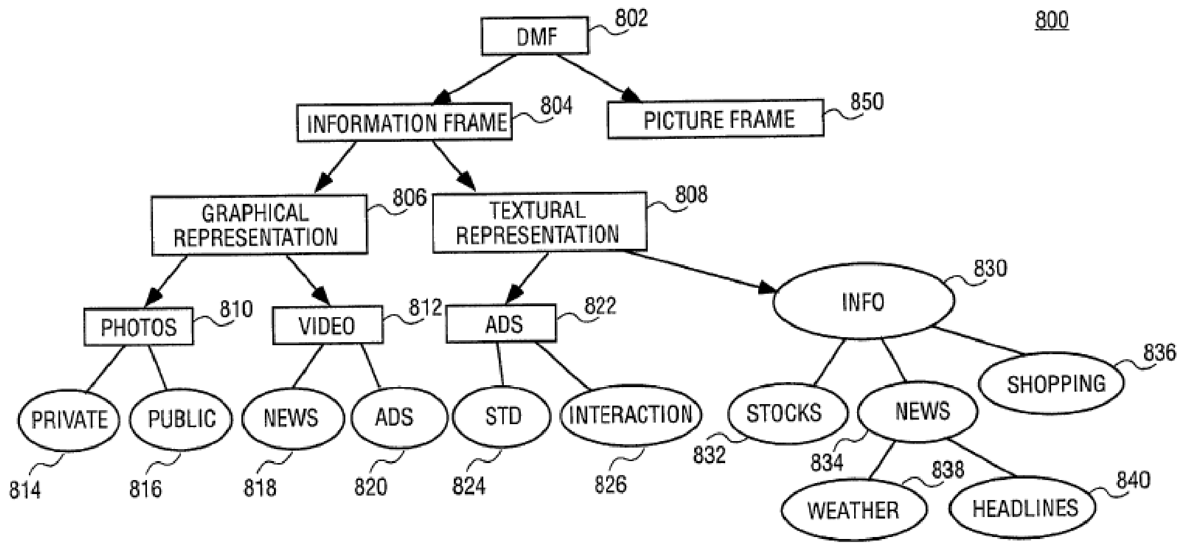

FIG. 8

1581. Dr. Johnson is conflating information from 830 with pictures from 850.

1582. The modes are described as: "While in the pictorial mode of DMF displays a sequence of predefined pictures, the information mode of DMP displays a set of information or data such as news, financial data, and the like." Bandaru at 9:50-53. (Note: DMP is in Bandaru, but I assume this is a typo and should read DMF).

1583. Bandaru goes on to further describe a financial mode: "Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, such categories can include news, sports, entertainment, financial data, et cetera." Bandaru at 9:63-65.

1584. Also, Bandaru simply does not disclose any periodic or automatic relay of images. Even if one agrees with Dr. Johnson that relaying of information such as "advertisements, weather, stock trading news, headline news, daily news summaries, and interactive gambling" would be

periodic, there is no description in Bandaru of how the transmission of such data would occur, given Bandaru is silent regarding any periodic or automatic relay of any data. This claim element requires that the periodic relay of data is in response to a request, and, given Bandaru does not disclose anything regarding periodic or automatic relay of images, there is no suggestion of any request being made by the DMF. Data can be transmitted in various ways, such as a server push. Bandaru simply does not disclose or suggest the specific claim language of this claim element.

1585. Dr. Johnson then refers to the portion of Bandaru, again, regarding the different devices that can communicate with the DMF services: "In one embodiment, a user may use the telephone 1054 to initiate DMF network service 1058. Once DMF network service 1058 is initiated, it allows the user to use the services, such as reconfiguration of DMF. For example, when DMF 1052 needs to be reconfigured, DMF network services 1058 supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052. It should be noted that communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:6-11.

1586. Dr. Johnson also points to Bandaru at 12:15-20. Johnson ¶608. That excerpt from Bandaru states: "In another embodiment, a request for DMF network Service 1058 from DMF 1052 can be initiated via a direct connection. A direct connection is a cable or a modem that is directly connected between DNS 1059 and DMF 1052. The Internet 1056 can be an alternative connection between DNS 1059 and DMF 1052."

1587. Nothing in that section discloses, or even suggests anything occurring automatically. Aside from the fact that the terms "automatic" and "automatically" do not appear anywhere in Bandaru, a POSITA would understand that Bandaru actually teaches away from such automatic activity.

1588. The term "modem" is one that a POSITA would be very familiar with, and in fact most lay persons would be familiar with. Modems are not even always connected. One initiates a connection for a particular period of time, then ends that connection. Without an automatic initiation of communication, one could not have any automatic transmission.

1589. Again, a user utilizing a telephone or web page to manually conduct some activity is not *automatic*. Furthermore, Bandaru is again quite clear on the type of connection he contemplated: "Network-communicating device 710 may be a modem or a cordless modem, such as a cellular modem. In one embodiment, network-communicating device 710 is a one-way transmitting device, such as a pager type of one-way communication device. In another embodiment, network-communicating device 710 is a two-way communicating device, which may facilitate an interactive communication between devices. In one embodiment, DMF 701 uses a cellular modem to communicate with PC 712, DMF 714, and entity 716 or DMF Server 720." Bandaru at 10:20-29.

1590. As shown above, Bandaru even contemplates a cellular modem. Bandaru was issued on December 26, 2006, and filed on October 16, 2001. Anyone using a cellular device in that time frame would know that one had to pay for every minute of usage. Doing anything automatically would use up time and increase the cost of the cellular plan. It is therefore unsurprising that Bandaru does not disclose doing anything automatically.

1591. Dr. Johnson also refers in his report to a portion of Bandaru disclosing that a user can add an image to the DMF by moving the corresponding icon or thumbnail from a global storage to the DMF storage. Johnson ¶576. A POSITA would again understand that this is an entirely manual process; it does not involve sending image data in response to a display apparatus *automatically* issuing a request.

1592. Dr. Johnson also, rather inexplicably, discusses a DMF doing some level of configuration automatically. Again, I first note that the term "automatic" does not appear in Bandaru. Setting that to one side, at most, what Dr. Johnson is pointing to is about configuring the DMF device, not about automatically requesting and sending image data.

1593. Dr. Johnson attempts to bolster his assertion stating: "For example, as discussed above, it would have been obvious for the DMF to automatically issue a request for image data corresponding to a subscription installment to the DMF network service (e.g., according to a client pull model), in accordance with periodic time intervals specified by the subscription." Johnson ¶578.

1594. I first note that "subscription installment" does not appear in Bandaru. In *one* place, Bandaru states that a user can subscribe to categories of images. Bandaru at 10:44-50. Bandaru also does not disclose a "client pull model." Nothing in the description in Bandaru discloses or suggests automatically requesting images by the DMF. Rather, Bandaru simply discloses that one can have specific categories of images one is interested in.

1595. Dr. Johnson further states:

> To the extent Bandaru does not explicitly disclose that the apparatus initiates the communications session "upon connection to a power source and a communications source," both power and network connectivity would have been understood by a POSITA to be prerequisites to communicating with a server system, and accordingly, it would have been obvious to a POSITA to check for the existence of such prerequisites before initiating the communications session.

Johnson ¶910.

1596. This statement overlooks an important aspect of the claim language. Claim 1 clearly recites the apparatus initiates the communications session ***upon*** connection to a power source and a communications source, i.e., automatically. Dr. Johnson attempts to make this seem commonplace, but, especially at the time, devices would not necessarily initiate a communications

session ***upon*** connection to a power source and a communications source. What was normal was for a device to be connected to a power source and a communications source, but do nothing until prompted by a user. Dr. Johnson's statement that the DMF of Bandaru would be connected to a power source and a communications source at some point prior to communicating does nothing to help Bandaru reach the claim language.

1597. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that a DMF can "synchronize with the DMF network on a periodic basis" to upload "to the DMF network objects that were loaded into the DMF from the external devices" and to download "to the DMF objects that . . . have not been sent to the DMF." Bandaru II at 16:33-60. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate the DMF and server performing periodic and automatic connections/communications to receive images. This feature was apparently never contemplated by Bandaru until after the Patents-in-Suit.

1598. Apparently recognizing that Bandaru is deficient, Dr. Johnson attempts to combine Bandaru with each of Criss, Kottapurath, and Kikinis.

1599. Dr. Johnson combines, in the alternative, each of Criss, Kottapurath, and Kikinis with Bandaru to attempt to meet this claim element. However, it should be also noted that none of Criss, Kottapurath, and Kikinis are in the same field of endeavor as the Patents-in-Suit: personal display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing

display devices required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated display device design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

1600. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine Criss with Bandaru. Johnson ¶912. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. This is in an entirely different field than Bandaru. Criss is related to managing cellular networks, not to the field of consumer digital display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

1601. Regardless, Criss describes a process in which a mobile device communicates with a host computer 30 that "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" A host computer

30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

1602. Criss thus discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Bandaru, this combination would not reach the claims of the Patents-in-Suit.

1603. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶913. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Bandaru than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

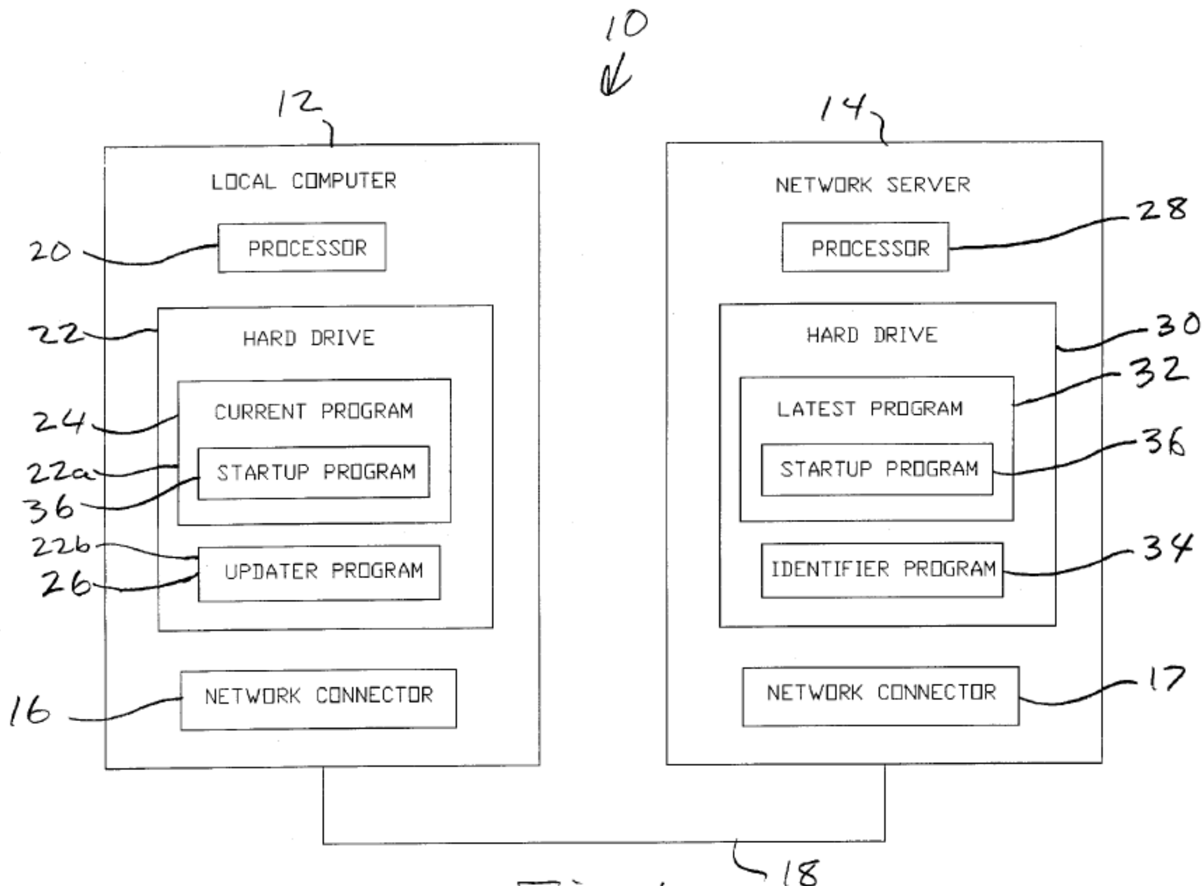

Fig. 1

1604. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Bandaru. Figure 3 of Kottapurath shows the process:

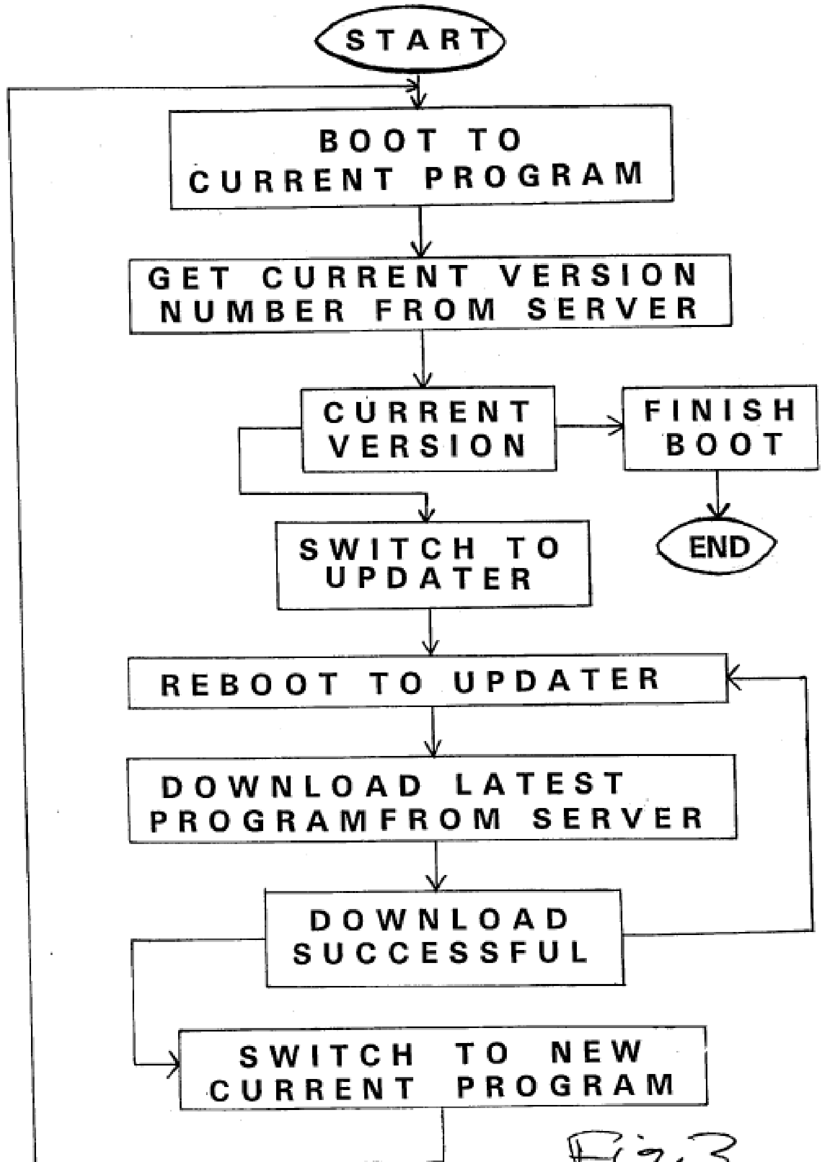

Fig. 3

1605. Dr. Johnson also asserts that Kikinis discloses this element, stating:

Kikinis discloses a service, including an apparatus and software, "that enables users who have purchased an Internet appliance such as a WEB phone, for example, to obtain third-party assistance in setting-up and configuring the device for successful operation." Kikinis at 4:22-27. "Such Internet appliances include any device that is used for accessing and operating on the Internet, or other types of switch-packet networks that may stand alone or be linked to the Internet. Examples are WEB phones, WEB TV's, Palm-top computers, Internet capable cell phones, Laptop computers, and so on." *Id.* at 4:43-48. When "a user plugs in a specific Internet appliance . . . and insures that all hardware and connections are correct . . . the user

> calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased. The appliance is then connected to server 21." *Id.* at 8:22-29. The server then communicates with the Internet appliance to perform set-up operations, which may include software updates. *Id.* at 8:41-60, 6:26-35.

Johnson ¶914.

1606. First, Kikinis is not analogous art, as it deals with a process to set up telephones. Also, as shown above, Kikinis discloses that a device can call a 1-800 number to get assistance, but only when a user performs the call, or when a user gives permission for the device to perform the call. Kikinis thus does not disclose an automatic process. Dr. Johnson, recognizing this, essentially says that it would be "obvious that obtaining the user's permission could be omitted." Johnson ¶915. There is no suggestion in Kikinis to omit how Kikinis is disclosed to operate, and Dr. Johnson appears to only state it would be obvious to do so based on hindsight and a need to try to reach this claim element, neither of which is a proper motivation to modify Kikinis.

1607. Dr. Johnson is positing that a POSITA would find it obvious to omit a step specifically enumerated in Kikinis, and the only rational Dr. Johnson provides is that the process would be automatic, in other words, so that one could view Kikinis as meeting a particular claim limitation of the '656 Patent. Dr. Johnson then cites a portion of Kikinis in support of his assertions: "What is clearly needed is a system including apparatus that allows a one-touch transparent set-up and configuration process that does not require much more than a user ID and account number or credit card number to successfully configure an Internet appliance." (Kikinis 3:6-10)

1608. However, that portion of Kikinis belies Dr. Johnson's position. A POSITA would readily see that Kikinis is envisioning a user interaction involving a user ID and either an account number or credit card number. This is not automatic. In fact, Kikinis requires the user ID or credit

card number to function, thus demonstrating that one could not alter Kikinis to perform this step automatically.

1609. Dr. Johnson then states: "A POSITA would have been motivated to incorporate the teachings of any one of Criss, Kottapurath, or Kikinis with Bandaru," and that "POSITA would have understood that by automatically initiating communication with the DMF server, e.g., when the DMF is powered on and connected to the Internet, the DMF can more quickly receive information for configuring itself and begin running, while minimizing the need for user intervention." Johnson ¶916. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF somehow to connect to a server and obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

1610. Dr. Johnson is quite clear in where he believes updates will come from: "Moreover, it would have been obvious to a POSITA that the operating system software update could be obtained from the same server system that relays image data and preferences to the frame device." Johnson ¶674. However, this is flawed. The only possible server in Bandaru that might be used is the DMF server which has a user profile database. As has been pointed out, adding any additional tasks to this server is very problematic: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059. server 1050, or server 1062." Bandaru at 12:1-3. Bandaru contemplates having the user profile database/DMF network service on a DNS server. Adding the storing and updating of software to the DNS server would substantially degrade network performance.

1611. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Bandaru with one of Criss, Kottapurath, or Kikinis (although as indicated above, I do not agree that they necessarily could be combined), but does not provide sufficient reasons for why a POSITA *would* attempt such modifications to Bandaru.

1612. See also Section XIII.A.2 regarding claim 2 of the '573 Patent.

1613. For at least the reasons described in this section, Bandaru alone or in combination with the other references does not anticipate or render obvious this claim limitation.

iv. Claim [1(f)] sending a request for image data to said server system via said communications network;

1614. For this element, Dr. Johnson alleges that Bandaru discloses that its DMF device receives content such as images from the DMF server discloses in Bandaru for the same reasons he asserted with respect to claim 1 of the '573 Patent and Claim 1 of the '930 Patent. Johnson ¶¶919-921.

1615. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

1616. As I explained regarding claim 2 of the '573 Patent, Dr. Johnson simply ignores the "automatically" requirement of this claim limitation.

1617. In, paragraph 568 of Dr. Johnson's report, he states:

> Moreover, Bandaru discloses that after the user uses the PC to request DMF network service, "DMF network service 1058 provides services directly to DMF 1052 after it receives the request." *Id.* at 12:22-24; see also *id.* at 4:1-17 (describing capture and transfer of image data from Internet servers to DMF in FIG. 2).

Johnson ¶568.

1618. First, Dr. Johnson is taking this language out of context. The "request" described at 12:22-24 of Bandaru is initiated by a user:

- "To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service 1058." Bandaru at 12:3-5.
- "Once DMF network service 1058 is initiated, it allows the user to use the services." Bandaru at 12:7-9.
- "PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050." Bandaru at 12:21-26.

1619. As shown above, the "request" pointed to by Dr. Johnson is not automatic nor made by a display device, but is initiated manually by a user and via PC 1050. Bandaru's process is thus not automatic. It is done manually when the user sends a request.

1620. Dr. Johnson goes on to point to various elements of Bandaru he believes are requests for images. But none of the portions he cites are automatic. Rather, they are manual. It should also be noted that the word "automatic" does not appear in Bandaru.

1621. Bandaru does not explain exactly how a DMF receives images associated with the DMF. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other functionality of the two-way program is described. Bandaru merely describes that images are "forwarded" from a device such as a PC to the DMF:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion.

Bandaru at 3:31-41.

1622. Similarly, the claims of Bandaru only describe that images are "forwarded," "transmitted," or "provided to" the DMF. Bandaru simply does not disclose an automatic request/response communication protocol.

1623. Dr. Johnson appears to admit this in paragraph 573 of his report when he asserts: "To the extent Bandaru does not expressly disclose that the user's preferences and image data are periodically relayed by the DMF server system to the DMF, it is my opinion that it would have been obvious to a POSITA for the DMF server system to periodically relay such images and preferences to the DMF as periodic updates for advertisements, weather, stock trading news, headline news, daily news summaries, and interactive online gambling and consistent with the subscribed image data categories."

1624. However, most of the information Dr. Johnson points to in Bandaru is merely textual information, including weather, stocks, headlines, interactive gambling (part of the interactive section 826), Bandaru at 11:34-40, and advertisements, are, as shown in FIG. 8 of Bandaru, below, textual (i.e., not images) information provided as part of textural representation 808. This is made even more clear in figure 8 of Bandaru:

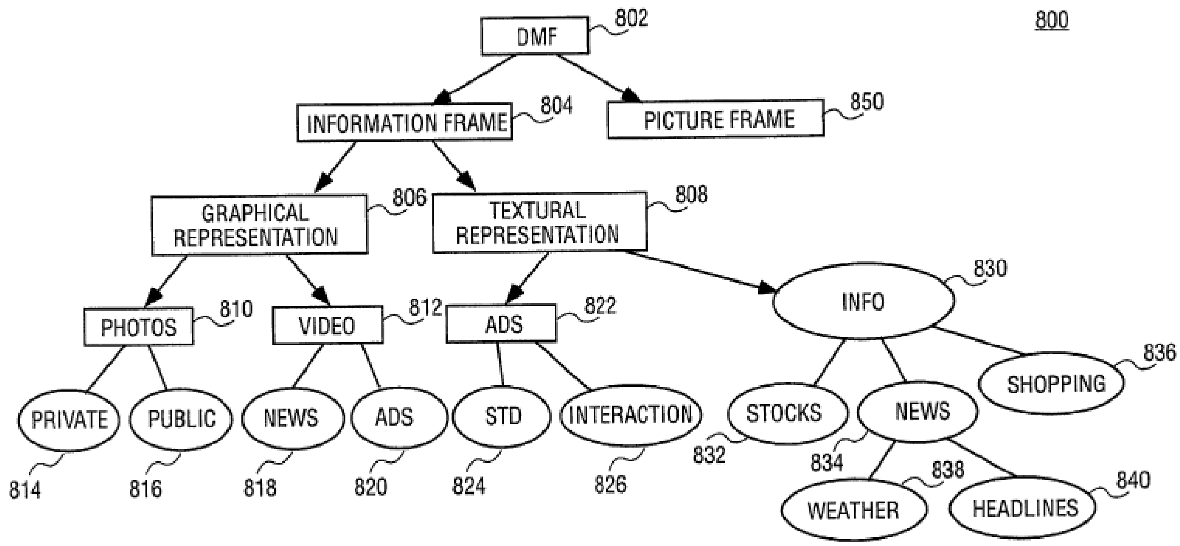

FIG. 8

1625. Dr. Johnson is conflating information from 830 with pictures from 850.

1626. The modes are described as: "While in the pictorial mode of DMF displays a sequence of predefined pictures, the information mode of DMP displays a set of information or data such as news, financial data, and the like." Bandaru at 9:50-53. (Note: DMP is in Bandaru, but I assume this is a typo and should read DMF).

1627. Bandaru goes on to further describe a financial mode: "Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, such categories can include news, sports, entertainment, financial data, et cetera." Bandaru at 9:63-65.

1628. Also, Bandaru simply does not disclose any periodic or automatic relay of images. Even if one agrees with Dr. Johnson that relaying of information such as "advertisements, weather, stock trading news, headline news, daily news summaries, and interactive gambling" would be

periodic, there is no description in Bandaru of how the transmission of such data would occur, given Bandaru is silent regarding any periodic or automatic relay of any data. This claim element requires that the periodic relay of data is in response to a request, and, given Bandaru does not disclose anything regarding periodic or automatic relay of images, there is no suggestion of any request being made by the DMF. Data can be transmitted in various ways, such as a server push. Bandaru simply does not disclose or suggest the specific claim language of this claim element.

1629. Dr. Johnson then refers to the portion of Bandaru, again, regarding the different devices that can communicate with the DMF services: "In one embodiment, a user may use the telephone 1054 to initiate DMF network service 1058. Once DMF network service 1058 is initiated, it allows the user to use the services, such as reconfiguration of DMF. For example, when DMF 1052 needs to be reconfigured, DMF network services 1058 supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052. It should be noted that communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:6-11.

1630. Dr. Johnson also points to Bandaru at 12:15-20. Johnson ¶608. That excerpt from Bandaru states: "In another embodiment, a request for DMF network Service 1058 from DMF 1052 can be initiated via a direct connection. A direct connection is a cable or a modem that is directly connected between DNS 1059 and DMF 1052. The Internet 1056 can be an alternative connection between DNS 1059 and DMF 1052."

1631. Nothing in that section discloses, or even suggests anything occurring automatically. Aside from the fact that the terms "automatic" and "automatically" do not appear anywhere in Bandaru, a POSITA would understand that Bandaru actually teaches away from such automatic activity.

1632. The term “modem” is one that a POSITA would be very familiar with, and in fact most lay persons would be familiar with. Modems are not even always connected. One initiates a connection for a particular period of time, then ends that connection. Without an automatic initiation of communication, one could not have any automatic transmission.

1633. Again, a user utilizing a telephone or web page to manually conduct some activity is not *automatic*. Furthermore, Bandaru is again quite clear on the type of connection he contemplated: “Network-communicating device 710 may be a modem or a cordless modem, such as a cellular modem. In one embodiment, network-communicating device 710 is a one-way transmitting device, such as a pager type of one-way communication device. In another embodiment, network-communicating device 710 is a two-way communicating device, which may facilitate an interactive communication between devices. In one embodiment, DMF 701 uses a cellular modem to communicate with PC 712, DMF 714, and entity 716 or DMF Server 720.” Bandaru at 10:20-29.

1634. As shown above, Bandaru even contemplates a cellular modem. Bandaru was issued on December 26, 2006, and filed on October 16, 2001. Anyone using a cellular device in that time frame would know that one had to pay for every minute of usage. Doing anything automatically would use up time and increase the cost of the cellular plan. It is therefore unsurprising that Bandaru does not disclose doing anything automatically.

1635. Dr. Johnson also refers in his report to a portion of Bandaru disclosing that a user can add an image to the DMF by moving the corresponding icon or thumbnail from a global storage to the DMF storage. Johnson ¶576. A POSITA would again understand that this is an entirely manual process; it does not involve sending image data in response to a display apparatus *automatically* issuing a request.

1636. Dr. Johnson also, rather inexplicably, discusses a DMF doing some level of configuration automatically. Again, I first note that the term "automatic" does not appear in Bandaru. Setting that to one side, at most, what Dr. Johnson is pointing to is about configuring the DMF device, not about automatically requesting and sending image data.

1637. Dr. Johnson attempts to bolster his assertion stating: "For example, as discussed above, it would have been obvious for the DMF to automatically issue a request for image data corresponding to a subscription installment to the DMF network service (e.g., according to a client pull model), in accordance with periodic time intervals specified by the subscription." Johnson ¶578.

1638. I first note that "subscription installment" does not appear in Bandaru. In *one* place, Bandaru states that a user can subscribe to categories of images. Bandaru at 10:44-50. Bandaru also does not disclose a "client pull model." Nothing in the description in Bandaru discloses or suggests automatically requesting images by the DMF. Rather, Bandaru simply discloses that one can have specific categories of images one is interested in.

1639. Also, Bandaru does not disclose or suggest receiving in response to said request for image data "a set of data from said first remote server system comprising one or more image data files."

1640. Dr. Johnson asserts: "a POSITA would have understood that the user profile managed by the DMF server includes image data of the images added by the user…" because the user profile in Bandaru "stores the selected categories or websites." Johnson ¶¶597-598. However, as I have explained regarding the other claim elements, nothing in Bandaru suggests that the user profile would contain image data; Bandaru only discloses that the DMF server and user profile store *selected categories or websites*, Bandaru at 10:51-60, that is, merely "references" and not

actual images. Bandaru at 14:6-7 (claim 1). The term "user profile" appears 16 times in Bandaru. Bandaru refers to a user profile database, Bandaru at 10:42-43, 10:58-64, 12:1-5, user profile storing categories, Bandaru at 10:52-56, user profile being related to a menu. Bandaru 13:18-23. But none of these portions of Bandaru disclose, or even suggest, that the user profile contains any actual image data.

1641. Bandaru specifically states: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059, server 1050, or server 1062. To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through DMF network service 1058." Bandaru at 12:1-5. A POSITA would immediately recognize that if the user profiles can be physically located on a DNS server, they would not contain image data. This becomes clear when one considers what a DNS server does.

1642. The Lab notes for Rice University Comp 321: Introduction to Computer Systems, state:

> IP addresses are difficult for humans to remember, so the Domain Name System (DNS) is used to provide a mapping between easy to remember textual domain names (sometimes simply called hostnames) and IP addresses. A domain name consists a hierarchical sequence of textual labels that are separated by dots, with the right-most label identifying the top-level domain for the name. For example, rice.edu, cs.rice.edu, and www.cs.rice.edu are all examples of different domain names that belong to the edu top-level domain. The name rice.edu refers to the rice subdomain of edu, the name cs.rice.edu refers to the cs subdomain of rice.edu, and the name www.cs.rice.edu refers to the www subdomain of cs.rice.edu. Other top-level domain names include com, org, and net.[138]

1643. Every time one visits a web page, or sends an email, the DNS server must be consulted in order to retrieve the IP address of the target server. This means that DNS servers tend to get a very large amount of traffic. Storing image data on such a server would be a serious mistake

[138] https://www.clear.rice.edu/comp321/html/laboratories/lab11/

as it would take up substantial storage space on the server, and would unduly tax traffic to the server. If, however, a user profile is just some information about a user, and does not contain image data, then storing the profile on a DNS server would not be contraindicated.

1644. Not only does Bandaru not disclose the user profile including image data, but a POSITA would understand that attempting to include image data with the user profile would render some embodiments of Bandaru untenable. My analysis here also applies to the other claim elements regarding "a user interface . . . configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system," as, again, Bandaru does not disclose storing actual image data on its DMF server.

1645. While Dr. Johnson repeats the assertion that the user profile in Bandaru contains image data, Johnson ¶¶598-599, Bandaru does not actually disclose the user profile containing image data.

1646. There are standard internet servers from which a user can *retrieve* images. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1647. A POSITA would readily understand that there is no way for Bandaru's DMF server to cause various internet servers to generate a set of data comprising image data files.

1648. A POSITA would further understand that the DMF server of Bandaru stores user profiles, but does not store images. I note that Dr. Johnson does not cite any part of Bandaru that discloses images being on the DMF server.

1649. See also Section XIII.A.2 regarding claim 2 of the ’573 Patent.

1650. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

v. Claim [1(g)] receiving image data and authentication information from said server system in response to said request; [1(h)] authenticating said server system;

1651. As described above, the cited references do not disclose or suggest receiving image data in response to a request. The cited references also do not disclose or suggest receiving authentication information from said server system in response to said request, nor authenticating said server system.

1652. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

1653. For this claim limitation, Dr. Johnson again refers mainly to his analysis with respect to claim 2 of the ’573 Patent. Johnson ¶¶923, 931-932. As was stated in reference to the ’573 Patent previously, a POSITA would first note that the words “authenticate” and “authentication” do not appear anywhere in Bandaru. Furthermore, no related terms appear in Bandaru such as “password,” “security,” “confidential,” or “login.” This is a strong indicator that these technologies were not even envisioned by Bandaru.

1654. Regarding authentication, Dr. Johnson merely states: “Bandaru discloses a device-server (e.g., client-server) system for distributing image data. However, to the extent that Bandaru does not disclose the use of client-server authentication within that system, the concept of client-

server authentication within such systems was well known as of the earliest filing date of claim 2 of the ’573 Patent, including as described in U.S. Patent No. 5,657,390 to Elgamal, and TLS 1.0, which was published as RFC 2246.” Johnson ¶618.

1655. Though Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Bandaru. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶619-624, 925-926. Dr. Johnson then states: “Furthermore, a POSITA, as of the earliest filing date of the ’573 Patent, would have been motivated to combine Bandaru with the security and device authentication features, including the security handshaking prior to the transfer of data, disclosed in Elgamal and/or RFC 2246 to ensure data security and integrity and authenticate the server within Bandaru’s client-server (e.g., DMF-DMF network service) image distribution system. A POSITA would have also been motivated to make this combination to ensure network security on frame devices by requiring the device to authenticate the server to ensure that the device is communicating with the correct server before accepting data from the server.” Johnson ¶626.

1656. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[139] The article explains, especially for implementing client-side SSL authentication of servers, “developing SSL implementations for smaller embedded systems is no small challenge, since there is no ‘embeddedSSL’ protocol,” and because “encryption operations are expensive, both in terms

[139] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

of processor cycles and memory usage."[140] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1657. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1658. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

1659. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added.

[140] *Id.*

1660. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1661. Even as of today, no authentication is needed to retrieve an image from an internet server.

1662. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1663. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1664. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must

contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1665. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1666. Dr. Johnson states: "The combination of Elgamal with Bandaru is a combination of prior art elements according to known methods to yield predictable result." Johnson ¶630. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Bandaru. Second, as has been pointed out, Bandaru would not benefit from such a combination. A combination of Bandaru with Elgamal or TLS would not be simple or predictable.

1667. Dr. Johnson points repeatedly to Bandaru's discussing a photo for "private use" to infer a need for authentication and security in Bandaru (Bandaru 11:21-24). However, Bandaru does not disclose what this means. Dr. Johnson seems to conflate private use with a user's private photos. However, Bandaru says very little on the matter. There are only two sentences in Bandaru devoted to this topic: "Photo portion 810 can be further divided into private block 814 and public block 816. Private block 814 refers to individual photos, for example, an individual creates a

photograph for private use" (Bandaru 11: 21-24). However, Figure 8 of Bandaru does elucidate this issue:

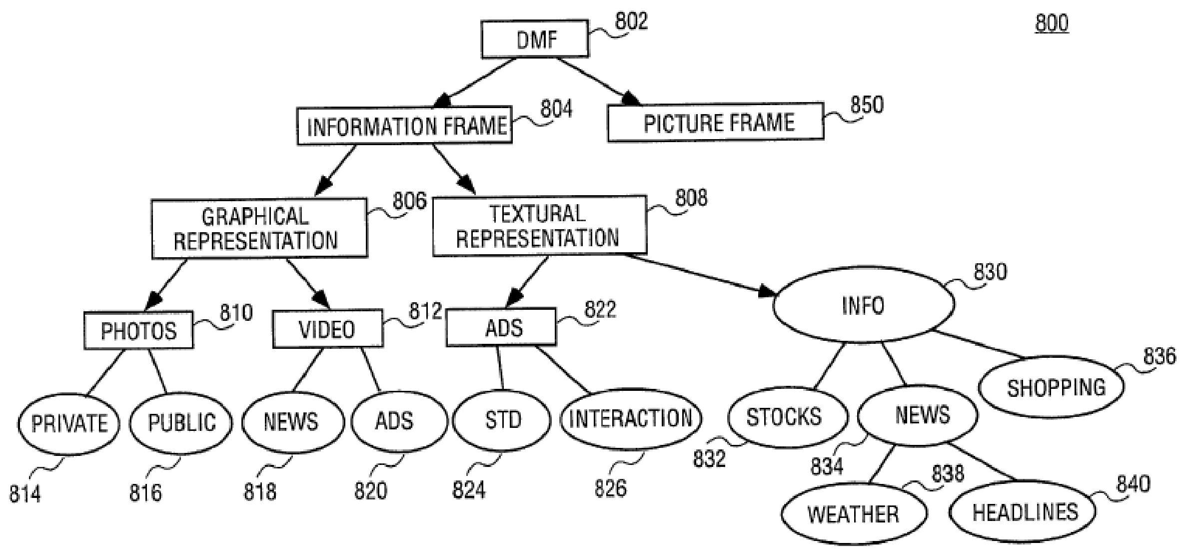

FIG. 8

1668. A POSITA would immediately see that block 814 is related to the photos 810 which are part of the graphical representation 806 of the information frame 804. A POSITA would see that this is referring to information that happens to contain a photo and setting aside that photo for private use. This does not refer to the user's private photos or even to the picture frame 850.

1669. See also Section XIII.A.2 regarding claim 2 of the '573 Patent.

1670. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

vi. Claim [1(i)] storing said received image data in said memory;

1671. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

1672. Second, I note that this element cannot be met for the same reasons as elements [1(f)] and [1(g)] of the '656 Patent because, since Bandaru does not disclose or suggest "sending a request for image data to said server system via said communications network" and "receiving image data," then Bandaru cannot disclose or suggest storing ***said received*** image data.

1673. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

vii. Claim [1(j)] displaying said image data on said display screen;

1674. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

1675. Second, I note that this element cannot be met for the same reasons as elements [1(f)], [1(g)], and [1(i)] of the '656 Patent because, since Bandaru does not disclose or suggest "sending a request for image data to said server system via said communications network" and "receiving image data," then Bandaru cannot disclose or suggest displaying ***said*** image data.

1676. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

viii. Claim [1(k)] receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network; [1(l)] automatically updating said computer readable instructions for controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device;

1677. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

1678. I also note that, as Claim 1 of the '656 Patent also recites authentication, to attempt to reach all claim elements of Claim 1 of the '656 Patent, Dr. Johnson is combining three or more prior art references together, which a POSITA would recognize starts to become untenable. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

1679. Dr. Johnson asserts: "A POSITA would have found it obvious for the updating to occur automatically because it would enable the device to obtain new versions of the instructions and thereby receive the latest functionality and bug fixes without requiring the user to initiate the process." Johnson ¶949). This appears to be at least a tacit admission that Bandaru does not actually disclose automatically performing any function.

1680. It should be noted that the word "automatic" does not appear in Bandaru. The only discussion of updating in Bandaru is updating the menu (Bandaru 13:14-15). Dr. Johnson's argument is essentially if one assumes that Bandaru discloses an operating system, even though it does not, then further assumes Bandaru discloses updating the operating system, even though it does not, then on top of these assumptions, assumes it would have been automatic, even though Bandaru does not disclose any automatic process, then Bandaru would disclose this claim limitation. This is supposition predicated on supposition, based on yet another supposition.

1681. Dr. Johnson then states: "Additionally, as discussed above, Bandaru, alone or in combination with Criss, Kottapurath, or Kikinis, discloses causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system." Johnson ¶951.

1682. Dr. Johnson refers back to Section XI.B.3.a(6)). That section begins on paragraph 909 of Dr. Johnson's report. In that section, Dr. Johnson states: "To the extent Bandaru does not explicitly disclose that the apparatus initiates the communications session "upon connection to a power source and a communications source," both power and network connectivity would have been understood by a POSITA to be prerequisites to communicating with a server system, and accordingly, it would have been obvious to a POSITA to check for the existence of such prerequisites before initiating the communications session."

1683. Again, Dr. Johnson appears to be at least tacitly acknowledging that Bandaru does not actually have this claim limitation, but instead arguing it would have been obvious. However, his argument is flawed at least because he argues "it would have been obvious to a POSITA to check for the existence of such prerequisites before initiating the communication session." The claim limitation does not relate to checking pre-requisites. Even if one were to agree with

Dr. Johnson, he has not stated that it would have been obvious to a POSITA to believe that Bandaru discloses said computer readable instructions for controlling the operation.

1684. For this claim limitation, Dr. Johnson again refers to and reuses his analysis regarding the '573 Patent, asserting that Bandaru could be combined with one of Criss or Kottapurath to provide software updates. Johnson ¶¶943-946.

1685. Dr. Johnson states: "Although Bandaru does not expressly disclose a method or process by which the DMF obtains an update of the DMF's operating system software from the DMF network service, the concept of updating the operating system of a device from a server system was a well-known method for managing client-server systems before the earliest filing date of the '573 Patent." Johnson ¶655.

1686. I do agree with Dr. Johnson that Bandaru does not disclose any method or process to obtain an update.

1687. Dr. Johnson combines, in the alternative, each of Criss and Kottapurath with Bandaru in an attempt to meet this claim element. However, it should be also noted that Criss and Kottapurath are not in the same field of endeavor as the Patents-in-Suit: personal display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing display devices required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated display device design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or

because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

1688. Dr. Johnson then points to Criss. As has been discussed previously in this report, Dr. Johnson first ignores the fact that Criss is in an entirely separate field than Bandaru. USPTO primary classification for Bandaru is 715/748. Class 715[141] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. These are entirely different fields.

1689. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Telecommunications, the primary field of Criss. Nor does Dr. Johnson's description of a POSITA indicate any skill in mobile devices, which are mentioned 129 times in Criss.

1690. Criss is related to managing cellular networks, not to the field of consumer display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

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[141] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

1691. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

1692. The claim requires that the display device initiate receiving of software updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Bandaru, this combination would not reach the claims of the Patents-in-Suit.

1693. A POSITA would note that the only appearance of *automatic*, *automatically*, or similar terminology in Criss is the following: "Additional features of both the data keeper 510 and time keeper 525, such as automatically adjusting for daylight Savings time and/or leap year

variations, is also preferably programmed into the processor 40 in accordance with known techniques in the art. Criss at 24:18-23.

1694. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶663-664. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Bandaru than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

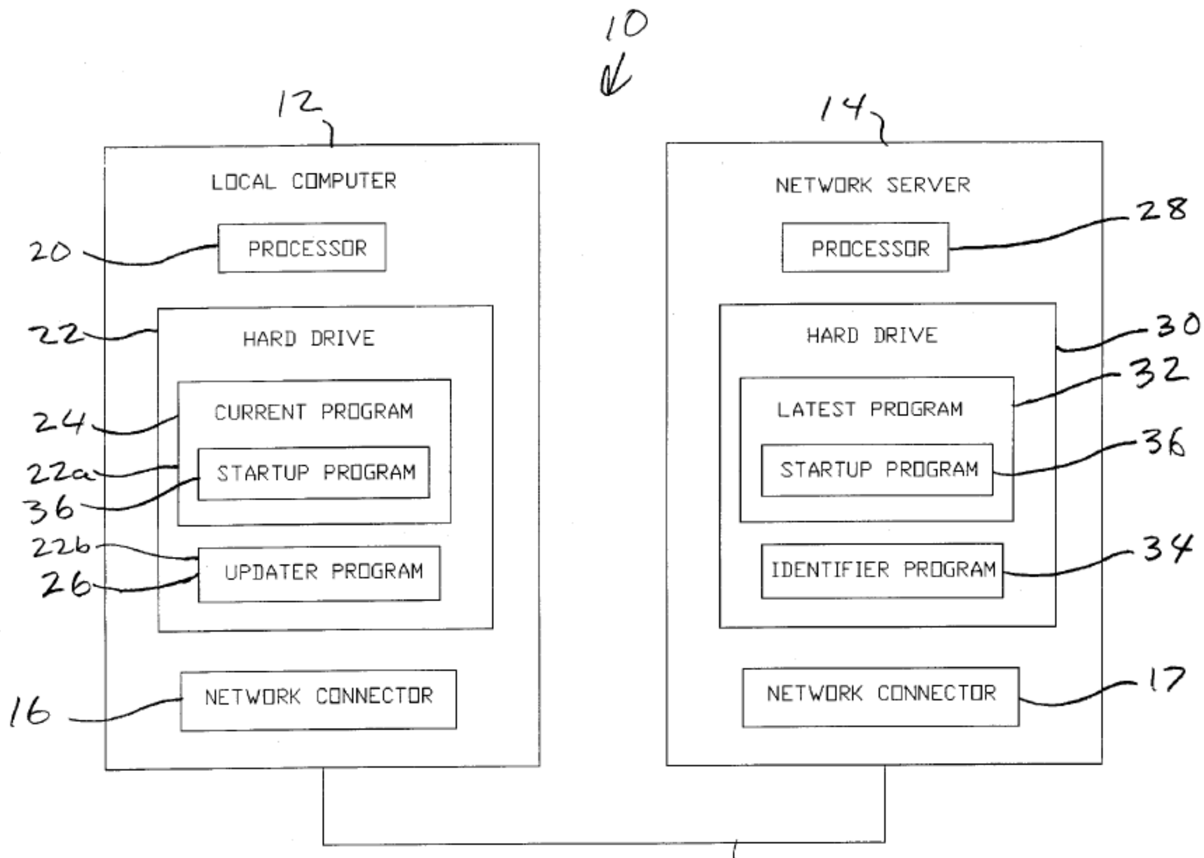

Fig. 1

1695. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program.

1696. Dr. Johnson states: "Kottapurath's" method begins when the operator of the local computer 12 turns on or reboots or otherwise re-starts the computer." Id. at 3:38-40. This causes a startup program to execute "before the functional components of the operating system are loaded, and includes an interrogation code segment which sends an interrogation to the network server 14 via the connector 16 and link 18." Id. at 3:42-49." Johnson ¶913.

1697. A POSITA would immediately notice two items. The first is that even Dr. Johnson states that the method begins "when the operator of the local computer 12 turns on or reboots or

otherwise re-starts the computer." That is in direct response to a specific user action. Second, a POSITA would recognize that this says nothing about "automatically initiate a communications session with said server system."

1698. A POSITA would understand that Kottapurath does not disclose "automatically initiate a communications session with said server system."

1699. Dr. Johnson then turns his attention to Kikinis. Dr. Johnson states: "the user calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased. The appliance is then connected to server 21." Id. at 8:22-29. The server then communicates with the Internet appliance to perform set-up operations, which may include software updates. Id. at 8:41-60, 6:26-35." (Johnson, 914) A POSITA would readily understands that this is not automatic. In fact, this can only occur after a user has given permission. Dr. Johnson appears to admit this in the next paragraph.

1700. Dr. Johnson then states: "A POSITA would have recognized that Kikinis' s service involves a device automatically initiating a communications session with a server system (e.g., the server) upon connection to a power source and communications source. While Kikinis discloses obtaining the user's permission prior to connecting to the server, a POSITA would have found it obvious that obtaining the user's permission could be omitted. Doing so would enable the Internet appliance to contact the server and perform the setup automatically," Johnson ¶915.

1701. Dr. Johnson is positing that a POSITA would find it obvious to omit a step specifically enumerated in Kikinis, and the only rationale Dr. Johnson provides is that the process would be automatic, in other words, so that one could view Kikinis as meeting a particular claim limitation of the '656 Patent. Dr. Johnson then cites a portion of Kikinis in support of his

assertions: "What is clearly needed is a system including apparatus that allows a one-touch transparent set-up and configuration process that does not require much more than a user ID and account number or credit card number to successfully configure an Internet appliance." (Kikinis 3:6-10)

1702. However, that portion of Kikinis belies Dr. Johnson's position. A POSITA would readily see that Kikinis is envisioning a user interaction involving a user ID and either an account number or credit card number. This is not automatic. In fact, Kikinis requires the user ID or credit card number to function, thus demonstrating that one could not alter Kikinis to perform this step automatically.

1703. Dr. Johnson then states: "A POSITA would have been motivated to incorporate the teachings of any one of Criss, Kottapurath, or Kikinis with Bandaru. Bandaru teaches that the DMF connects to and uses DMF network services, e.g., using a user profile maintained by the DMF network services, to configure itself when running. See Bandaru at 13:16-20 (When the DMF is in "running mode, DMF fetches the menu from a corresponding user profile and configures the display screen according to the menu"). A POSITA would have understood that by automatically initiating communication with the DMF server, e.g., when the DMF is powered on and connected to the Internet, the DMF can more quickly receive information for configuring itself and begin running, while minimizing the need for user intervention." Johnson ¶916.

1704. It must first be noted that Dr. Johnson does not even claim that Bandaru, Criss, Kottapurath, or Kikinis disclose these claim limitations. Rather, Dr. Johnson posits that it would have been obvious to alter Criss to connect automatically Johnson ¶915. Dr. Johnson also admits that Bandaru does not disclose this claim limitation but rather posits it would have obvious to alter

Bandaru to connect automatically. Kikinis, Criss and Kottapurath explicitly require user actions in order to perform any steps.

1705. What Dr. Johnson is positing is, once again, supposition on top of supposition. He assumes that a POSITA would first ignore what Kikinis, Criss, and Kottapurath explicitly require, then read into Bandaru and Criss items that simply are not disclosed. Then Dr. Johnson builds on this supposition with another supposition that one would combine some grouping of Bandaru, Criss, Kikinis, or Kottapurath.

1706. I further note that even today, in 2023, Microsoft requires user permission to install updates. This is something Dr. Johnson appears to not notice: the fact that there are numerous scenarios in which one would not want connection to networks or other activities to be done automatically.

1707. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF somehow to obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

1708. Dr. Johnson is quite clear in where he believes updates will come from: "Moreover, it would have been obvious to a POSITA that the operating system software update could be obtained from the same server system that relays image data and preferences to the display device." Johnson ¶674. However, this is flawed. The only possible server in Bandaru that might be used is the DMF server which has a user profile database. As has been pointed out, adding any additional tasks to this server is very problematic: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059. Server 1050, or server 1062." Bandaru

at 12:1-3. Bandaru contemplates having the user profile database/DMF network service on a DNS server. Adding the storing and updating of software to the DNS server would substantially degrade network performance.

1709. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Bandaru with one of Criss, Kottapurath, or Kikinis (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Bandaru.

1710. See also Section XIII.A.3 regarding claim 19 of the '573 Patent.

1711. For at least the reasons described in this section, Bandaru, alone or in combination with Criss, Kottapurath, or Kikinis does not anticipate or render obvious this claim limitation.

ix. Claim [1(m)] said computer readable instructions for controlling the operation of said display device further comprising instructions for causing said display device to instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device.

1712. For this element, Dr. Johnson cites Bandaru alone as disclosing this element, specifically citing to Bandaru's disclosure of the DMF web page, which, Dr. Johnson asserts: "allows users to configure or receive the DMF network services," including subscribing to "multiple categories of images," "commercially available websites," and information categories for a given display device. Bandaru at 10:40-56. The user's selections via the remote web page are stored in a user profile that "can later be used as a default configuration for the corresponding DMF. Johnson ¶956.

1713. Dr. Johnson further alleges that:

> POSITA would have understood that by making these selections, which are stored in the user profile and used to configure the DMF, the user is managing behavior characteristics of the display device by providing instructions about types of content (e.g., image categories, websites, etc.) to be displayed on the DMF. Moreover, a

> POSITA would have recognized the DMF web page through which these selections are provided as an interface accessible by a web browser (e.g., accessed via the PC 1050). Still further, a POSITA would have understood a request for DMF network service from the DMF to the DMF network server 1059 as an instruction to the server to create the interface.

Johnson ¶957.

1714. I disagree. As I explained in Section XIII.a, Bandaru states as follows:

> PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050. It should be noted that other methods of requesting DMF network service 1058 are possible, but they are not necessary to understanding the present invention.

Bandaru at 12: 21-28.

1715. A POSITA would note that not only are no other methods of requesting DMF network services described. Again, as I explained in Section XIII.a of this report, Dr. Johnson is conflating the profile information of the DMF network services with image data that is not retrieved from the DMF network server/services. Also, again, Bandaru explains that setting up user profiles requires a manual user process. The '656 Patent explains that:

> The initialization process begins at step 800 when the frame device is connected to a power Source and a communication medium such as a telephone line or network connection. The frame device may be configured to automatically connect via a wireless connection or the user may manually couple it to a power source and communication medium.
>
> . . .
>
> At step 805, the data repository is analyzed to determine whether there is a record for the frame device initiating the connection. If a record for the frame device is not located, step 807 executes and an image prompting the user to create a picture box account associated with that frame device is displayed to the user.
>
> . . .
>
> Once the picture box is obtained, step 813 executes, at step 813 the behavior characteristics of the frame device is determined. The behavior characteristics may be established by default or customized according to the user's preferences. When the behavior characteristics are determined, step 815 executes. At step 815, the

> invention contemplates loading the behavior characteristics into the data repository for use by the frame device.

’930 Patent at 23:64-24:3, 24:15-21, 24:44-51.

1716. Therefore, this prompting by the display device to create the interface as described. for example, in this portion of the ’656 Patent refers to an automatic initialization process carried out by the display apparatus to ensure the user has a record and picture box interface associated with the remote server system. This is not disclosed in Bandaru. All Dr. Johnson cites from Bandaru is disclosure that a user can access the DMF web page to change certain parameters. Bandaru, however, does not recite that the DMF ever prompts the DMF server to create an interface. Bandaru’s disclosure is presented as if the DMF web page is already there, and asserting that Bandaru’s DMF must prompt its creation, as Dr. Johnson does, is unfounded in Bandaru’s disclosure and merely speculative.

1717. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

x. Claim [2.] The display device of claim 1 wherein said computer readable instructions for storing said image data in said memory further comprise instructions for causing image data previously stored in said memory to be replaced with said received image data.

1718. First, I note that Claim 1 and 2 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

1719. Second, I note that this element cannot be met for the same reasons as elements [1(f)], [1(g)], and [1(i)] of the ’656 Patent because, since Bandaru does not disclose or suggest “sending a request for image data to said server system via said communications network” and

"receiving image data," then Bandaru cannot disclose or suggest "causing image data previously stored in said memory to be replaced with ***said received*** image data," as recited in Claim 2.

1720. Also, Dr. Johnson asserts that the DMF of Bandaru must perform this claim element because the memory of the DMF "would have a maximum amount of available storage" and thus it "would be obvious to replace previously stored image data . . . with newly stored image data." Johnson ¶962. But this makes assumptions that are not based on any disclosure in Bandaru or the other references. It would not be obvious to simply replace images on Bandaru's DMF Bandaru merely discloses manual providing of images to the DMF, Bandaru at 12:7-9, 12:21-26, 12:48-64, and thus a user would manually manage the storage. I note that filling up storage and requiring manual storage management is much more common than the alternative of automatic replacement Dr. Johnson proposes, such as when a computer's hard drive fills up and needs to have contents manually deleted to free up space.

1721. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

xi. Claim [5.] The display device of claim 1 wherein said memory further comprises preference information for controlling the display of said image data by said display device.

1722. For this element, Dr. Johnson merely refers back to his analysis regarding claim 2 of the '573 Patent. Johnson ¶969. In that prior section, Dr. Johnson also first refers back to claim element [1.b] for his discussion on "operate according to user preferences." In this prior section concerning claim 1, Dr. Johnson first asserts that use of the "user input device" in Bandaru to pause or move forward or backward in displaying images corresponds to this claim limitation. Johnson ¶¶522-523. However, this assertion ignores the description of the user input device in Bandaru, as well as the user preferences disclosed by the '573 Patent.

1723. Bandaru is clear on what the user input device can do. As one example, Bandaru states:

> The user-input device 410 contains a reverse button 420, a pause button 422, and a fast forward button 424. The reverse button 420 allows a user to view previously dis played images, while the fast forward button 424 allows a user to view next sequential images. The pause button 422 causes a currently displaying image to freeze until a release command is issued by a Subsequent activation of the pause button 422.

Bandaru at 7:51-58.

1724. The specification of the Patents-in-Suit decries the inadequacy of prior art to function according to preferences set by a user: "Additionally, the receiver cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences." '573 Patent at 4:4-6. The specification of the Patents-in-Suit, for example, then describes how preferences set by a user are a benefit in the current invention, stating: "Each frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences. For example, a frame device may dynamically obtain image data from a networked data source (e.g., a client computer), store that data, and then display that data according to criteria established by an authorized user." '573 Patent at 8:38-41.

1725. The '573 Patent provides additional details on the preferences established by a user:

> For example, data about each user and the preferences associated with that user may be held in the data repository. Each frame device is configured to connect to the data repository at one or more predefined intervals utilizing an interconnection fabric such as the Internet. Once a frame device connects to the data repository, it utilizes the information stored in the data repository to update the image data that is to be displayed and the behavior characteristics of each frame device. For example, the functions provided by the onboard Software may be modified when the behavior characteristics are updated. The data repository is therefore responsible for queuing and archiving image data and/or software data for each frame device associated with the data repository.

'573 Patent at 19:11-25.

1726. A POSITA would notice several things about the preferences of the Patents-in-Suit established by a user. First, these preferences can be stored in a database ("data about each user and the preferences associated with that user may be held in the data repository"). Second, the display device automatically configures to execute according to preferences established by a user ("Each frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences").

1727. In Bandaru, nothing is displayed according to preferences set by a user. Rather, once images are stored on the digital media frame (DMF), the user may simply navigate through the images manually using the input device (buttons 420, 422, 424). This is not only clear from the text of Bandaru quoted above, but also from Figure 4 of Bandaru:

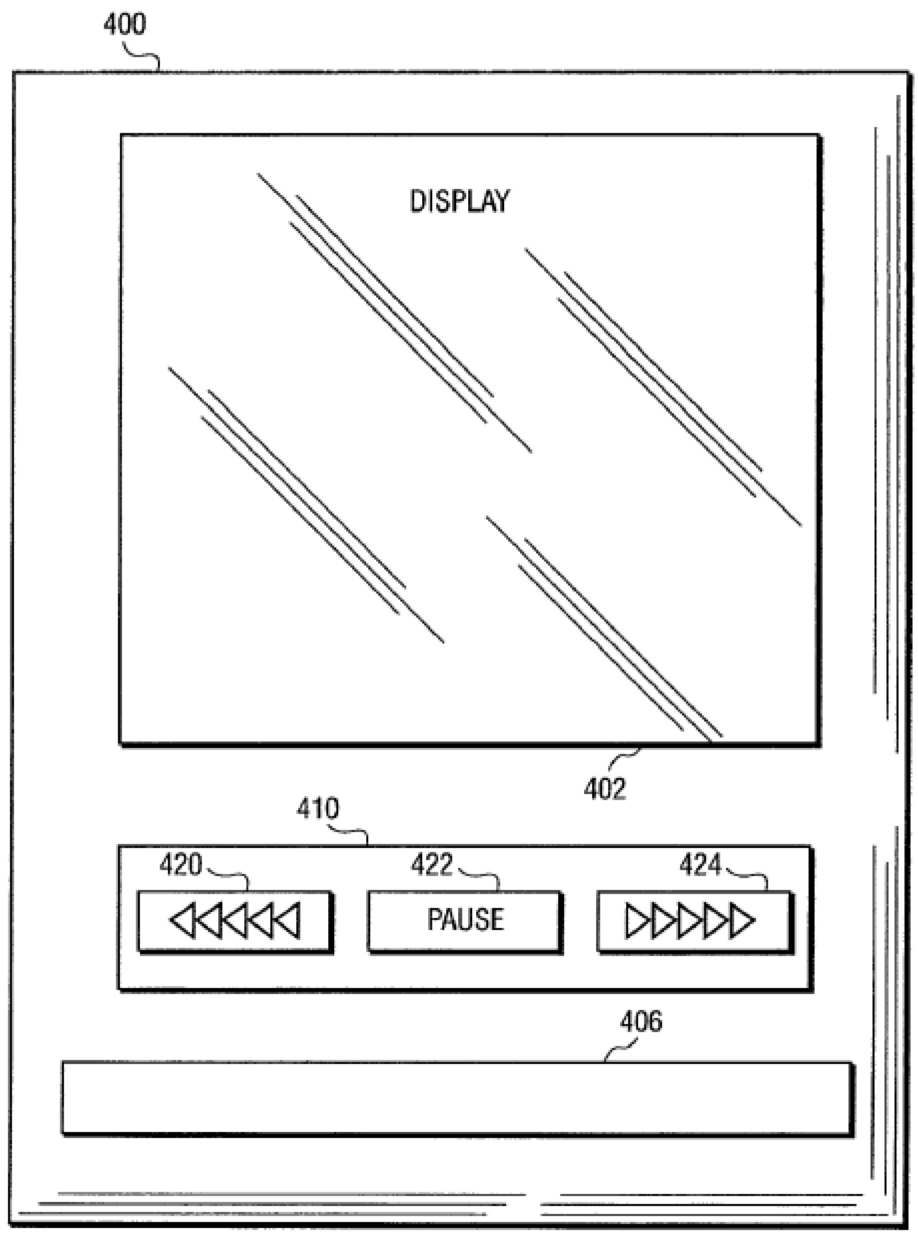

FIG. 4

1728. Dr. Johnson attempts to conflate the above-described user input device of Bandaru with completely separate passages from Bandaru describing operations taken by a computer providing images to the DMF. First, Dr. Johnson cites the following from Bandaru:

> Upon receipt of image data, the computer 112 may perform some functions before the computer 112 passes the image data to the DMF 102. The function may involve reordering the sequences of the images to be displayed, or converting one type of image data format to another type of image data format, and so on.

Johnson ¶522 (citing Bandaru at 3:45-51).

1729. Then, in the same sentence, Dr. Johnson states Bandaru discloses "providing the 'user certain controls to manage how images should be displayed.'" Johnson ¶522 (citing Bandaru at 4:40-50). But this section of Bandaru at 4:40-50 simply describes the various physical inputs devices of the DMF, such as the above described "push button" shown in FIG. 4 of Bandaru.

1730. Dr. Johnson appears to be attempting to merge Bandaru at 3:45-51 with Bandaru at 4:40-50. This is an error. A POSITA reading Bandaru would immediately see that, at 3:45-51, Bandaru is describing what the computer will do when providing images to the DMF, and does not disclose or even suggest a user being involved, or that a user can provide any settings or preferences. Then, several paragraphs later, Bandaru 4:40-50 describes the simple buttons in Bandaru as shown in FIG. 4, which merely let a user pause or move forward or backward between images stored on the DMF.

1731. Thus, what Dr. Johnson describes as an "image display sequence defined by the user," Johnson ¶523, a POSITA would recognize as simply a user controlling a device manually using forward, reverse, and pause buttons. These portions of Bandaru relied upon by Dr. Johnson do not disclose, or even suggest, storing preferences established by the user or automatically configuring the display according to said preferences.

1732. Dr. Johnson then turns his attention to the web page for the DMF in Bandaru. Specifically, Dr. Johnson states: "For example, Bandaru discloses a user web interface provided by a DMF network server that enables the user to configure the user's DMF device, select DMF

network services for the DMF device, and select images and/or subscribe to image categories for delivery to, and display by, the DMF device." Johnson ¶524.

1733. I first note that Bandaru describes a "DMF web page." I would next note that Bandaru provides a rather thorough description of what the DMF web page does:

> In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:44-56.

1734. At most, what Bandaru is disclosing is a web page that lets a user subscribe to categories of images. These images can include commercially available websites, including stock market news pages sports, and weather channels. These will not display images in a sequence established by the user as disclosed in the '573 Patent. Rather, this allows Bandaru's DMF to function as a web browser and the user can receive information from certain web pages via the browser. Bandaru at 10:63-65 (stating the DMF 710 can access the web site).

1735. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

xii. Claim [6.] The display device of claim 5 wherein said preference information comprises communication timing information for specifying the timing of sending requests for image data to said server system.

1736. For this element, Dr. Johnson merely refers back to his analysis regarding Claims 1 and 7 of the '930 Patent. Johnson ¶¶972-973.

1737. A POSITA would first note that timing is never mentioned in Bandaru.

1738. Dr. Johnson states: "For example, the user in Bandaru can use the DMF web page to select categories of images for subscription as well commercially available websites, such as stock market news, sports, and weather channels, to view on the DMF." Johnson ¶833. However, as I have described elsewhere in this report, nothing in that quote from Bandara discloses or suggests any timing, and especially not that a connection timing parameter is stored in the DMF of Bandaru.

1739. Dr. Johnson then states: "A POSITA would have recognized . . . that the DMF would need to occasionally connect to the DMF server to obtain new images, updated weather information, stock quotes, and the like. Moreover, it would have been obvious to allow the user to configure when and how often this connection occurs, such as a periodic frequency." Johnson ¶834. First, Dr. Johnson supposes one would need to "occasionally connect to the DMF server to obtain new images, updated weather information, stock quotes, and the like."

1740. Dr. Johnson then adds an additional supposition, assuming that a user can configure the frequency of this operation. This is a supposition on top of other suppositions. It also ignores many other ways the DMF could update information, the simplest being that when the DMF is turned on to update information, or when the user requests an update.

1741. Additionally, as has been pointed out repeatedly in this report previously, Bandaru does not disclose or suggest the DMF of Bandaru does not obtain those items from the DMF server, and, in general, Bandaru does not provide for automatic or periodic updates.

1742. Dr. Johnson then turns his attention to Criss. Dr. Johnson first ignores the fact that Criss is in an entirely separate field than Bandaru. The primary USPTO classification for Criss is 455, Telecommunications. The sub category is 418 or Programming control. USPTO primary

classification for Bandaru is 715/748. Class 715[142] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. These are entirely different fields.

1743. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Telecommunications, the primary field of Criss. Nor does Dr. Johnson's description of a POSITA indicate any skill in mobile devices, which are mentioned 129 times in Criss.

1744. It is more likely than not that a POSITA, as defined by Dr. Johnson, could not combine Criss with anything, including Bandaru.

1745. At any rate, Dr. Johnson points out that Criss discloses "a software update schedule table" stored by a cellular device so that it can obtain updates via a cellular network. Johnson ¶835 (citing Criss at 2:64-3:5). Dr. Johnson then makes a conclusory statement that "a POSITA would have been motivated to combine the software update schedule described in Criss with Bandaru's client-server system (DMF-DMF network service) to allow the DMF to periodically connect to the server to fetch new information, such as DMF software updates." Johnson ¶837. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF somehow to obtain

[142] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

periodic software updates. There is no clear deficiency in Bandaru that would motivate a POSITA to modify Bandaru with Criss.

1746. For at least the reasons described in this section, Bandaru alone or in combination with Criss does not anticipate or render obvious this claim limitation.

xiii. Claim [7.] The display device of claim 5 wherein said preference information comprises display timing information for specifying the timing of displaying said image data on said display screen.

1747. Claim 7 is not rendered anticipated nor obvious at least for the reasons discussed with respect to Claim 1 of the ’656 Patent.

xiv. Claim [8.] The display device of claim 5 wherein said preference information comprises an image display list.

1748. For this element, Dr. Johnson merely refers back to his analysis of Claim 2 of the ’573 Patent. Johnson ¶979.

1749. With respect to the element of “an image display list,” Dr. Johnson again refers to the web page in Bandaru that allows a user to subscribe to categories of images. Johnson ¶¶583-585. The very section of Bandaru that Dr. Johnson cites belies his interpretation of it:

> DMF network service provides user and data services, which can be used to configure DMF. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selected the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:43-54.

1750. Dr. Johnson seems to assume that subscribing to a category is synonymous with downloading images, and that a list of categories somehow corresponds to an image display list on a display device. However, a POSITA reviewing Johnson would easily see that is not the case.

1751. A POSITA would first look to how Bandaru describes receiving an image to determine if this is according to user preferences. The following excerpts from Bandaru are informative:

a. "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru 3:1-4.
b. "The interface unit 104 is further capable of receiving and processing both digital and analog image data. It will be apparent to one of ordinary skill in the art that one or more of these external input devices may be connected to a particular DMF 102." Bandaru at 3:22-26.
c. "The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, Such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, Subsequently, transfers the image data to the DMP 102." Bandaru 3:30-38.
d. "The computer 112, which may be a PC, a workstation, a mini-computer, or a mainframe computer, or a processor based system, receives image data from other devices. Such as, Scanners, Internet servers, or cameras 110. Upon receipt of image data, the computer 112 may perform some functions before the computer 112 passes the image data to the DMF 102. The function may involve reordering the sequence of the images to be displayed, or converting one type of image data format to another type of image data format, and so on." Bandaru at 3:42-51.

e. “The Internet connector 116 is another external input device 100 that enables the DMF 102 to receive the image data directly from an Internet node.” Bandaru at 3:58-61.

1752. A POSITA would recognize that user preferences are not involved in any of the above processes. The only time the user has any control over the images is when they are being displayed, such that the user can choose to control the speed of display, pause, and execute similar actions: “In one embodiment, block 214 gives a user certain controls to manage how images should be displayed. Block 214 can be any conventional input device. Such as, a push button, a screen input device, remote control input device, or a sound activated input device (including speech recognition input-output device).” Bandaru at 4:40-47. This does not disclose user preference comprising an image display list, but only that a user can directly control the display device via inputs.

1753. Dr. Johnson also asserts that subscribing to the image categories and websites somehow discloses an image display list: “The image categories and commercially available websites, including, but not limited to, stock market news, sports, and weather channels, to which the user can subscribe, comprise ‘an image display list defined by the user.’ See ’573 Patent at 2:20-25.” Johnson at 584.

1754. It is not clear what relevance the entire paragraph Dr. Johnson cites from the ’573 Patent has to this claim limitation. The paragraph in its entirety is:

> A problem with prior art mechanisms, such as the one illustrated in FIG. 1a, is that the user must physically provide storage media 103 to the device. Thus, a person who does not have physical access to the device cannot introduce new images into the device. Moreover, the device cannot be controlled from a remote location. For example, making changes to a website cannot control the behavior of the control mechanism.

’573 Patent at 2:15-23.

1755. This section of the ’573 Patent is describing that prior devices could not be controlled remotely. Nothing in this is relevant to an image display list defined by the user. And, again, subscribing to website content does not amount to “an image display list defined by a user.”

1756. Dr. Johnson states: “For example, a POSITA would have found it obvious for user-selected categories and/or websites from “listed categories or web s[it]es” to be in the form of a list defined by the user, that specifies the images to be displayed by the frame device. Bandaru at 10:50-55.” Johnson ¶584.

1757. However, again, the section of the Bandaru that Dr. Johnson cites does not support his view. The section is provided here: “Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.” Bandaru 10:50-55.

1758. A POSITA would immediately recognize that nothing in this excerpt discusses displaying any images. For example, subscribing to website content does not allow a user to choose what images the DMF will receive. Rather, the DMF will receive whatever is provided by the website on its own initiative. Even if one were to view this passage in a light most favorable to Dr. Johnson’s interpretation, it would cause confusion. Assuming that the categories will be displayed, does that mean that every image in the category is displayed? If so, in what sequence? Furthermore, if there are multiple categories what order will the categories be displayed? A POSITA would recognize that Bandaru is simply stating that this information would be available to a DMF if the website were so configured. Furthermore, a POSITA would recognize that these categories are

part of the information mode of Bandaru, Bandaru at 9:50-53, 9:63-67, 10:1-5, 11:8-14, not the pictorial mode.

1759. Dr. Johnson then cites Bandaru at 3:42-49 which state "reordering the sequence of the images to be displayed." However, this is again taken out of context. This is not in any way related to the categories Dr. Johnson is discussing, nor to user preferences/selections, but rather is related to a process that is controlled by the computer 112 when images are provided by a computer 112 to the DMF. Note that this quotation comes from column 3 of Bandaru, and the categories come from column 10.

1760. What Dr. Johnson does here, as well as in other parts of his report, is to cobble together disparate portions of Bandaru and present them as if they are connected. A POSITA would understand this and further understand that Bandaru does not disclose this claim limitation.

1761. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

7. Claims 1, 11, and 20 of the '562 Patent are not invalid in view of Bandaru in combination with Hoyle, and one of Nishiyama, Elgamal, or RFC 2246, and one of Nishiyama, Criss, or Kottapurath, and one of Criss, Kottapurath, or Kikinis

1762. Dr. Johnson asserts: "Bandaru, in Combination with One or More of Elgamal, RFC 2246, Nishiyama, Criss, Kottapurath, Kikinis, and Hoyle, Invalidates the Asserted Claims of the '562 Patent." Johnson ¶980. As has already been discussed in Sections XII, a POSITA, as defined by Dr. Johnson, would most likely not have been skilled in Criss or Nishiyama, and would not have been able to combine either of those with anything. Furthermore, as has also been discussed in detail, there would be no motivation to combine any of Elgamal, RFC 2246, Nishiyama, Criss, Kottapurath, Kikinis, and Hoyle with Bandaru, and Dr. Johnson has not

provided any compelling reason to do so. As has been discussed, combining Bandaru with Kottapurath would require substantial work and undue experimentation.

1763. I note that Dr. Johnson is combining three or more prior art references together to try to reach the claim elements of claim 1 of the ’562 Patent, which a POSITA would recognize starts to become untenable. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

i. Claim [1.pre] An apparatus for displaying content comprising image data received from a server system via a communications network on a display screen comprising:

1764. For this element, Dr. Johnson refers back again to his analysis regarding element [1.a] of the ’573 Patent and asserts that Bandaru discloses an apparatus for displaying content comprising image data received from a server system via a communications network on a display screen by generally alleging that the DMF of Bandaru receives images from the DMF server. Johnson ¶¶983-985.

1765. As I have explained in Section XIII.a, Bandaru does not meet this claim limitation. I also note that, to show image data received from a server system, Dr. Johnson points to a user profile database in Bandaru, stating: “the DMF is connected via an interconnection fabric (i.e.,

Internet 718) to the DMF server 720, which includes a repository (i.e., user profile database 724), from which it obtains images for display." Johnson ¶518.

1766. The user profile database 724 is mentioned only 5 times in Bandaru, and at no point is there any disclosure, or even suggestion that this user repository database also has images. Dr. Johnson points to Figure 7 of Bandaru, which I have reproduced here:

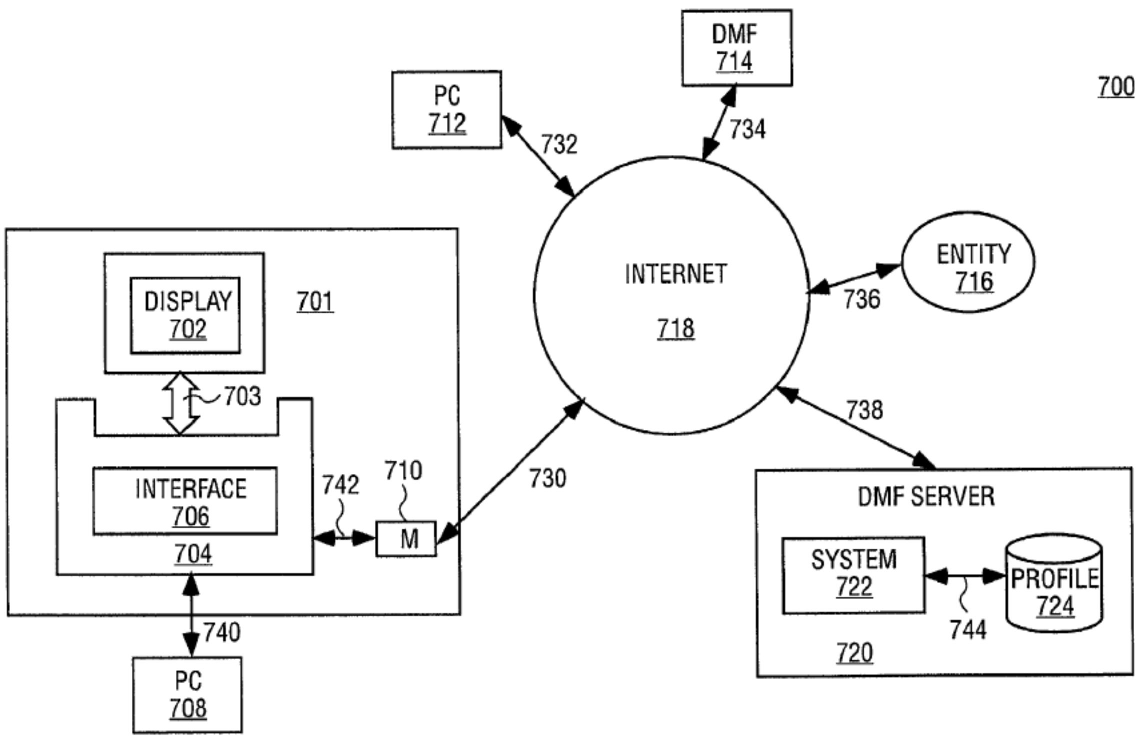

FIG. 7

1767. Neither the user profile database 724, the DMF server 720, or the System 722, are disclosed to provide images. Rather, Bandaru merely discloses that users can use a DMF network service provided by the DMF server 720, and that the DMF network service can be used to "subscribe" to "categories of images," or to "commercially available websites" to receive "stock

market news, sports, and weather channels." Bandaru at 10:39-65. The user profile database 724 merely stores user profiles that reflect the selected categories. Bandaru at 10:52-56.

1768. Bandaru specifically discloses the following regarding the DMF server 720:

> "DMF server 720 is a network server that provides DMF network service for DMF devices connected to the network. In one embodiment, DMF server includes a system 722 and a user profile database 724. DMF network service provides user and data services, which can be used to configure DMF. In one embodiment, the DMF network service supplies a DMF web page, which allows users to configure or receive the DMF network services. In this embodiment, the DMF web page lists multiple categories of images the user can subscribe to. Alternatively, the DMF web page may list multiple commercially available websites and a user can select listed websites to view his or her DMF. Commercially available websites may include, but are not limited to, stock market news, sports, and weather channels. After the user selects the listed categories or websites, the DMF network service creates a user profile and stores the selected categories or websites in the user profile. The user profile can later be used as a default configuration for the corresponding DMF.

Bandaru at 10:39-57.

1769. Thus, at most, the DMF server lists categories of images the user can subscribe to, but there is no disclosure or even a suggestion that these images are stored on the DMF server or in the user profile database, or that the DMF receives images from the DMF server.

1770. Rather, Bandaru discusses receiving image data in figure 5, shown here:

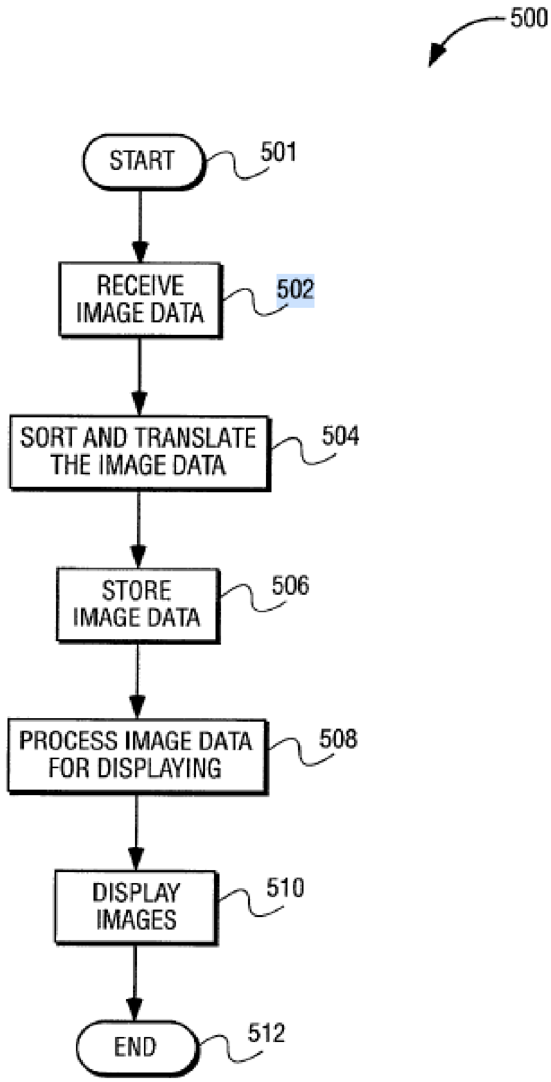

FIG. 5

1771. Bandaru explicitly states: "The process proceeds to block 502, where an interface unit of the DMF 400 receives the image data. The image data may be captured by image capturing devices, such as a digital or video camera." Bandaru at 8:1-4. Bandaru mentions that the DMF is "capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of

networks." Bandaru at 3:1-4. However, Bandaru does not disclose that the DMF server or the user profile database provide the images. Rather, Bandaru merely states that images can be received from an "Internet node," (i.e., some Internet connected source like a website that provides the website content) and that images received by the DMF can have an Internet address associated with the image that "indicates which Internet node was used for sending the image data to the DMF 102," including an "Internet address [that] links to other websites that are related to the image." Bandaru at 3:59-61, 4:18-34. But when referring to the DMF server and user profile database specifically, Bandaru merely discloses that the DMF server and user profile database are used to "configure" the DMF by allowing a user to subscribe to image "categories" or websites. Bandaru at 10:6-11:2

1772. Bandaru thus does not disclose a server system from which the DMF receives images data, and thus Dr. Johnson's statement that the DMF meets this limitation of the '562 Patent is incorrect.

1773. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

ii. Claim [1.e] a memory comprising a unique identifier for said apparatus;

1774. For this element, Dr. Johnson merely refers back to his analysis regarding claim 1 of the '930 Patent, and states that "Bandaru, alone or in combination with Nishiyama, Elgamal, or RFC 2246, discloses a memory comprising a unique identifier for said apparatus." Johnson ¶995.

1775. As I explained in Section XIII.a, Dr. Johnson seems to admit that Bandaru does not explicitly teach this claim limitation, but asserts that "Bandaru discloses that the DMF network services includes a user profile database that stores the images added, deleted, selected, and/or subscribed to by the user within the user's profile as the corresponding DMF's default

configuration, which necessarily requires a unique identifier for the corresponding DMF within the database." Johnson ¶745.

1776. While databases do require identifiers, the user profile database would only potentially require a unique identifier for the user (although Bandaru does not even disclose that), and not for the DMF device. Dr. Johnson goes on to assert: "For example, the DMF network services would need to maintain a mapping of DMFs in remote locations with user profiles maintained by the server to know to which DMFs the profiles correspond." Johnson ¶745. Again, Dr. Johnson seems to be at least tacitly acknowledging that Bandaru does not actually disclose this limitation. Furthermore, nothing in Bandaru even suggests any maintaining of a mapping of DMFs. Bandaru is also quite clear: the profiles described are user profiles, not DMF profiles.

1777. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that each DMF "may be assigned a unique identification when the DMF is manufactured." Bandaru II at 15:37-39. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate using a unique identifier.

1778. Dr. Johnson then attempts to combine Nishiyama with Bandaru. As I explain throughout this report, Dr. Johnson ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[143] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The

[143] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[144] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

1779. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Bandaru, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

1780. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose

[144] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

1781. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

1782. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶752. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server,[145] and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

1783. For Dr. Johnson's combination of Bandaru with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Bandaru with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

1784. Suggesting that Bandaru needs or would benefit from Elgamal or RFC 2246 ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru 3:1-4.

[145] *See, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier.").

Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1785. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[146] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[147] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1786. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1787. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

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[146] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[147] *Id.*

1788. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1789. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1790. Even as of today, no authentication is needed to retrieve an image from an internet server.

1791. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1792. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1793. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1794. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1795. For at least the reasons described in this section, Bandaru alone or in combination with the other references does not anticipate or render obvious this claim limitation.

iii. Claim [1.f] computer readable instructions different from said content for controlling the operation of said apparatus, and a version identifier for said computer readable instructions,

1796. For this element, Dr. Johnson refers back to his analysis regarding Claim 1 of the ’656 Patent and Claim 1 of the ’930 Patent. Johnson ¶ ¶997, 904-907.

1797. Dr. Johnson makes the statement: “Although Bandaru does not expressly disclose that the operating system, or onboard software, of the DMF is stored *within* its memory.” Johnson ¶758. Dr. Johnson then states:

> Furthermore, it would have been obvious to a POSITA to store a current version of the operating system or onboard software of the DMF to allow the system to work properly. It was well known to a POSITA that software, such as operating system software or other onboard may have different versions that are released over time as the software is updated. A version currently stored in the DMF is the current version. A POSITA would have also recognized that the current version may be the latest version, and a POSITA would have been motivated to store the latest version of the onboard software in the DMF to provide the DMF with the latest feature set and bug fixes.

Johnson ¶759.

1798. It appears that Dr. Johnson is admitting that this limitation is not actually disclosed in Bandaru. Dr. Johnson then assumes that Bandaru is meant to support software updates, which are not disclosed in Bandaru. Dr. Johnson then further assumes that Bandaru facilitates software updates by storing a version number, which is also not disclosed in Bandaru. In addition to basing assumptions upon assumptions, Dr. Johnson also ignores other ways software can be updated including:

a. Simply installing the latest version over whatever is already on the device, regardless of what version it is; and

b. Simply using the date stamp of the file and updating if something with a later date stamp is available.

1799. Assumptions predicated upon yet other assumptions do not render a claim limitation obvious. Finally, Dr. Johnson mentions that: “Bandaru, alone or in combination with

Nishiyama, Criss, or Kottapurath, discloses that said memory comprises a current version of onboard software," but offers no support from these other references or any other explanation regarding these references as to why there would be any motivation to modify Bandaru based on these three references.

1800. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

iv. Claim [1.g] said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network;

1801. For this element, Dr. Johnson refers to his analysis with respect to claim 1 of the '656 Patent, which in turn, also refers to his analysis with respect to claim 2 of the '573 Patent and claim 1 of the '930 Patent and their recitations regarding automatic communications. Johnson ¶ ¶1005, 909.

1802. As I explained regarding in Sections XIII.A.1-3, Dr. Johnson simply ignores the automatic nature of this claim element.

1803. Dr. Johnson states:

> When a user reconfigures, or initially configures, the user's corresponding DMF via the DMF network service web interface, the DMF network service creates the package data (user profile) containing the image data and user preferences defining the configuration. See Bandaru at 10:40-11:1. A POSITA would also have understood that the DMF network service relays the package data within the user profile containing image data and user preferences to the DMF device as information needed to complete the transaction of reconfiguring the user's DMF, e.g., where the DMF uses information contained within the user profile to configure its display. See Bandaru at 9:60-10:5, 10:6-29, 10:30-39, 10:40-11:1, 12:6-28, 13:16-23; 13:41-51, FIGS. 5-13.

Johnson ¶603.

1804. What is noticeably absent from Dr. Johnson's report, and from Bandaru, is any indication that any of this occurs automatically, i.e., upon connection to a power source and a communications source as claimed.

1805. Dr. Johnson also refers back to his report regarding claim 1, where, in paragraph 568 of his report, he states:

> Moreover, Bandaru discloses that after the user uses the PC to request DMF network service, "DMF network service 1058 provides services directly to DMF 1052 after it receives the request." *Id.* at 12:22-24; see also *id.* at 4:1-17 (describing capture and transfer of image data from Internet servers to DMF in FIG. 2).

Johnson ¶568.

1806. First, Dr. Johnson is taking this language out of context. The "request" described at 12:22-24 of Bandaru is initiated by a user:

- "To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service 1058." Bandaru at 12:3-5.
- "Once DMF network service 1058 is initiated, it allows the user to use the services." Bandaru at 12:7-9.
- "PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050." Bandaru at 12:21-26.

1807. As shown above, the "request" pointed to by Dr. Johnson is not automatic nor made by an apparatus, but is initiated manually by a user and via PC 1050. Bandaru's process is thus not automatic. It is done manually when the user sends a request.

1808. Dr. Johnson goes on to point to various elements of Bandaru that he believes are requests for images. But none of the portions he cites are automatic. Rather, they are manual. It should also be noted that the word "automatic" does not appear in Bandaru.

1809. Bandaru does not explain exactly how a DMF receives images associated with the DMF. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other functionality of the two-way program is described. Bandaru merely describes that images are "forwarded" from a device such as a PC to the DMF:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion.

Bandaru at 3:31-41.

1810. Similarly, the claims of Bandaru only describe that images are "forwarded," "transmitted," or "provided to" the DMF. Bandaru simply does not disclose an automatic request/response communication protocol.

1811. Dr. Johnson appears to admit this in paragraph 573 of his report when he asserts: "To the extent Bandaru does not expressly disclose that the user's preferences and image data are periodically relayed by the DMF server system to the DMF, it is my opinion that it would have been obvious to a POSITA for the DMF server system to periodically relay such images and preferences to the DMF as periodic updates for advertisements, weather, stock trading news, headline news, daily news summaries, and interactive online gambling and consistent with the subscribed image data categories."

1812. However, most of the information Dr. Johnson points to in Bandaru is merely textual information, including weather, stocks, headlines, interactive gambling (part of the

interactive section 826), Bandaru at 11:34-40, and advertisements, are, as shown in FIG. 8 of Bandaru, below, textual (i.e., not images) information provided as part of textural representation 808. This is made even more clear in figure 8 of Bandaru:

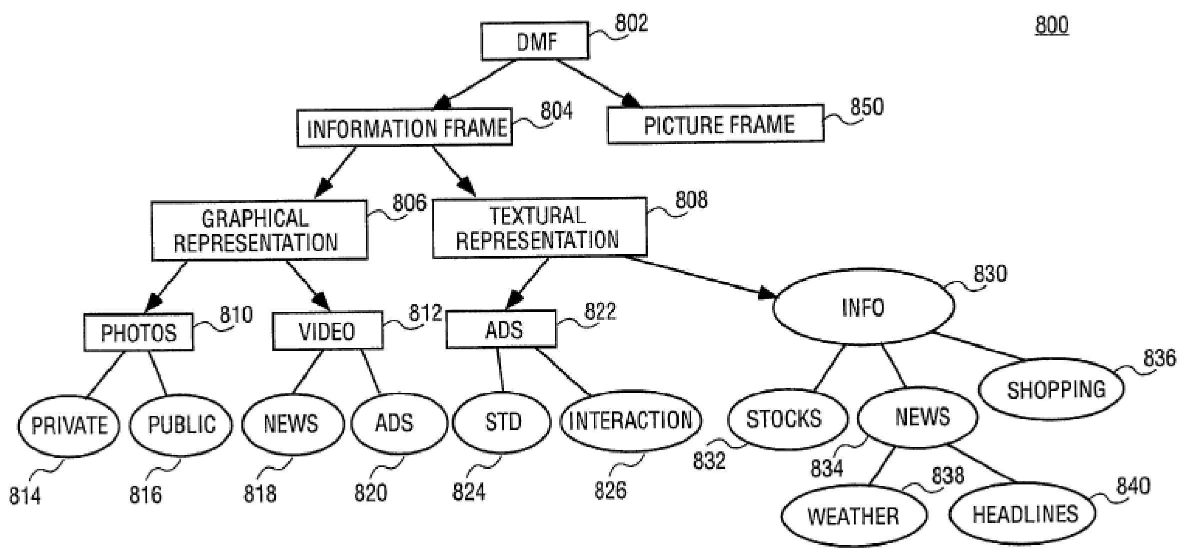

FIG. 8

1813. Dr. Johnson is conflating information from 830 with pictures from 850.

1814. The modes are described as: "While in the pictorial mode of DMF displays a sequence of predefined pictures, the information mode of DMP displays a set of information or data such as news, financial data, and the like." Bandaru at 9:50-53. (Note: DMP is in Bandaru, but I assume this is a typo and should read DMF).

1815. Bandaru goes on to further describe a financial mode: "Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, such categories can include news, sports, entertainment, financial data, et cetera." Bandaru at 9:63-65.

1816. Also, Bandaru simply does not disclose any periodic or automatic relay of images. Even if one agrees with Dr. Johnson that relaying of information such as "advertisements, weather, stock trading news, headline news, daily news summaries, and interactive gambling" would be periodic, there is no description in Bandaru of how the transmission of such data would occur, given Bandaru is silent regarding any periodic or automatic relay of any data. This claim element requires that the periodic relay of data is in response to a request, and, given Bandaru does not disclose anything regarding periodic or automatic relay of images, there is no suggestion of any request being made by the DMF. Data can be transmitted in various ways, such as a server push. Bandaru simply does not disclose or suggest the specific claim language of this claim element.

1817. Dr. Johnson then refers to the portion of Bandaru, again, regarding the different devices that can communicate with the DMF services: "In one embodiment, a user may use the telephone 1054 to initiate DMF network service 1058. Once DMF network service 1058 is initiated, it allows the user to use the services, such as reconfiguration of DMF. For example, when DMF 1052 needs to be reconfigured, DMF network services 1058 supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052. It should be noted that communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:6-11.

1818. Dr. Johnson also points to Bandaru at 12:15-20. Johnson ¶608. That excerpt from Bandaru states: "In another embodiment, a request for DMF network Service 1058 from DMF 1052 can be initiated via a direct connection. A direct connection is a cable or a modem that is directly connected between DNS 1059 and DMF 1052. The Internet 1056 can be an alternative connection between DNS 1059 and DMF 1052."

1819. Nothing in that section discloses, or even suggests anything occurring automatically. Aside from the fact that the terms "automatic" and "automatically" do not appear anywhere in Bandaru, a POSITA would understand that Bandaru actually teaches away from such automatic activity.

1820. The term "modem" is one that a POSITA would be very familiar with, and in fact most lay persons would be familiar with. Modems are not even always connected. One initiates a connection for a particular period of time, then ends that connection. Without an automatic initiation of communication, one could not have any automatic transmission.

1821. Again, a user utilizing a telephone or web page to manually conduct some activity is not *automatic*. Furthermore, Bandaru is again quite clear on the type of connection he contemplated: "Network-communicating device 710 may be a modem or a cordless modem, such as a cellular modem. In one embodiment, network-communicating device 710 is a one-way transmitting device, such as a pager type of one-way communication device. In another embodiment, network-communicating device 710 is a two-way communicating device, which may facilitate an interactive communication between devices. In one embodiment, DMF 701 uses a cellular modem to communicate with PC 712, DMF 714, and entity 716 or DMF Server 720." Bandaru at 10:20-29.

1822. As shown above, Bandaru even contemplates a cellular modem. Bandaru was issued on December 26, 2006, and filed on October 16, 2001. Anyone using a cellular device in that time frame would know that one had to pay for every minute of usage. Doing anything automatically would use up time and increase the cost of the cellular plan. It is therefore unsurprising that Bandaru does not disclose doing anything automatically.

1823. Dr. Johnson also refers in his report to a portion of Bandaru disclosing that a user can add an image to the DMF by moving the corresponding icon or thumbnail from a global storage to the DMF storage. Johnson ¶576. A POSITA would again understand that this is an entirely manual process; it does not involve sending image data in response to a display apparatus *automatically* issuing a request.

1824. Dr. Johnson also, rather inexplicably, discusses a DMF doing some level of configuration automatically. Again, I first note that the term "automatic" does not appear in Bandaru. Setting that to one side, at most, what Dr. Johnson is pointing to is about configuring the DMF device, not about automatically requesting and sending image data.

1825. Dr. Johnson attempts to bolster his assertion stating: "For example, as discussed above, it would have been obvious for the DMF to automatically issue a request for image data corresponding to a subscription installment to the DMF network service (e.g., according to a client pull model), in accordance with periodic time intervals specified by the subscription." Johnson ¶578.

1826. I first note that "subscription installment" does not appear in Bandaru. In *one* place, Bandaru states that a user can subscribe to categories of images. Bandaru at 10:44-50. Bandaru also does not disclose a "client pull model." Nothing in the description in Bandaru discloses or suggests automatically requesting images by the DMF. Rather, Bandaru simply discloses that one can have specific categories of images one is interested in.

1827. Dr. Johnson further states:

> To the extent Bandaru does not explicitly disclose that the apparatus initiates the communications session "upon connection to a power source and a communications source," both power and network connectivity would have been understood by a POSITA to be prerequisites to communicating with a server system, and accordingly, it would have been obvious to a POSITA to check for the existence of such prerequisites before initiating the communications session.

Johnson ¶910.

1828. This statement overlooks an important aspect of the claim language. Claim 1 clearly recites the apparatus initiates the communications session ***upon*** connection to a power source and a communications source, i.e., automatically. Dr. Johnson attempts to make this seem commonplace, but, especially at the time, devices would not necessarily initiate a communications session ***upon*** connection to a power source and a communications source. What was normal was for a device to be connected to a power source and a communications source, but for the device to do nothing until prompted by a user. Dr. Johnson's statement that the DMF of Bandaru would be connected to a power source and a communications source at some point prior to communicating does nothing to help Bandaru reach the claim language.

1829. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that a DMF can "synchronize with the DMF network on a periodic basis" to upload "to the DMF network objects that were loaded into the DMF from the external devices" and to download "to the DMF objects that . . . have not been sent to the DMF." Bandaru II at 16:33-60. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate the DMF and server performing periodic and automatic connections/communications to receive images. This feature was apparently never contemplated by Bandaru until after the Patents-in-Suit.

1830. Apparently recognizing that Bandaru is deficient, Dr. Johnson attempts to combine Bandaru with each of Criss, Kottapurath, and Kikinis.

1831. Dr. Johnson combines, in the alternative, each of Criss, Kottapurath, and Kikinis with Bandaru to attempt to meet this claim element. However, it should be also noted that none of

Criss, Kottapurath, and Kikinis are in the same field of endeavor as the Patents-in-Suit: personal display apparatuses. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing display apparatuses required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated display apparatus design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

1832. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine Criss with Bandaru. Johnson ¶912. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. This is in an entirely different field than Bandaru. Criss is related to managing cellular networks, not to the field of consumer digital display apparatuses. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

1833. Regardless, Criss describes a process in which a mobile device communicates with a host computer 30 that "compares the version of operating software stored within the mobile

terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" a host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

1834. Criss thus discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display apparatus simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Bandaru, this combination would not reach the claims of the Patents-in-Suit.

1835. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶913. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Bandaru than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath.

However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

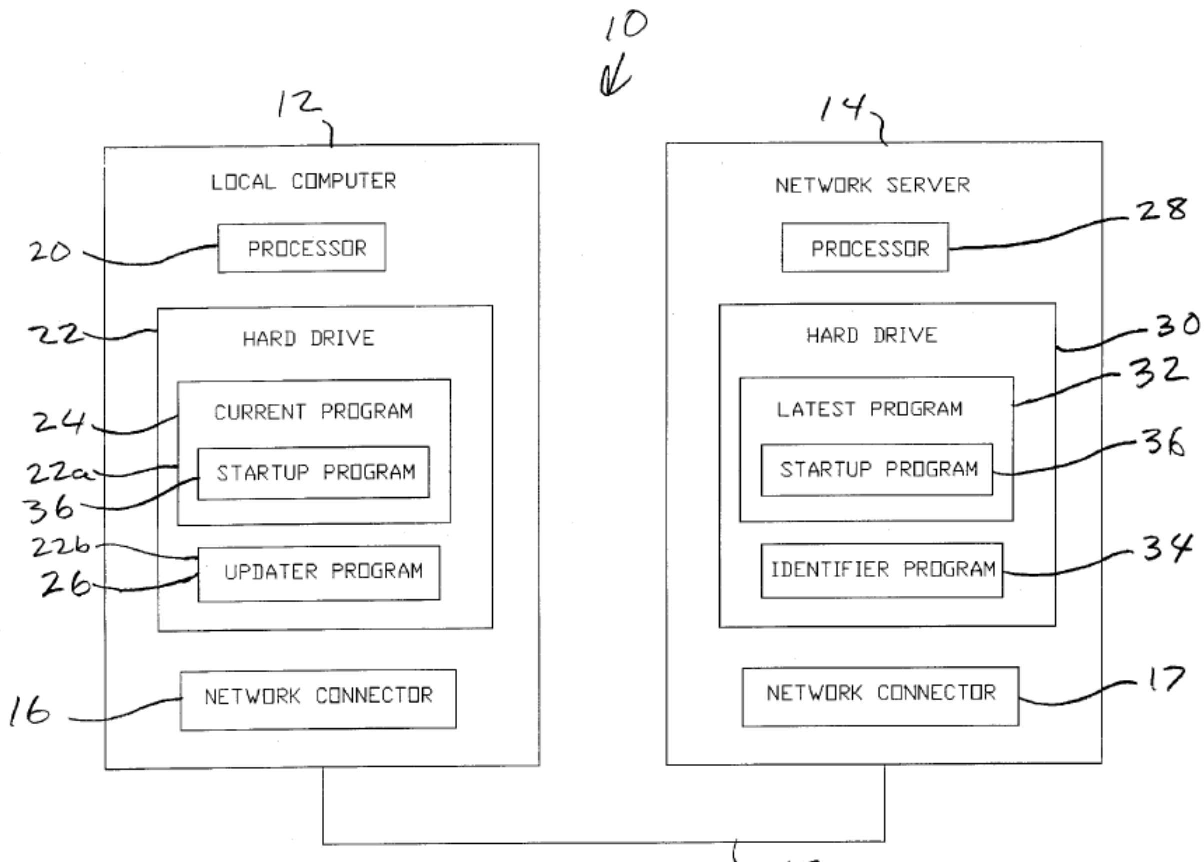

Fig. 1

1836. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Bandaru. Figure 3 of Kottapurath shows the process:

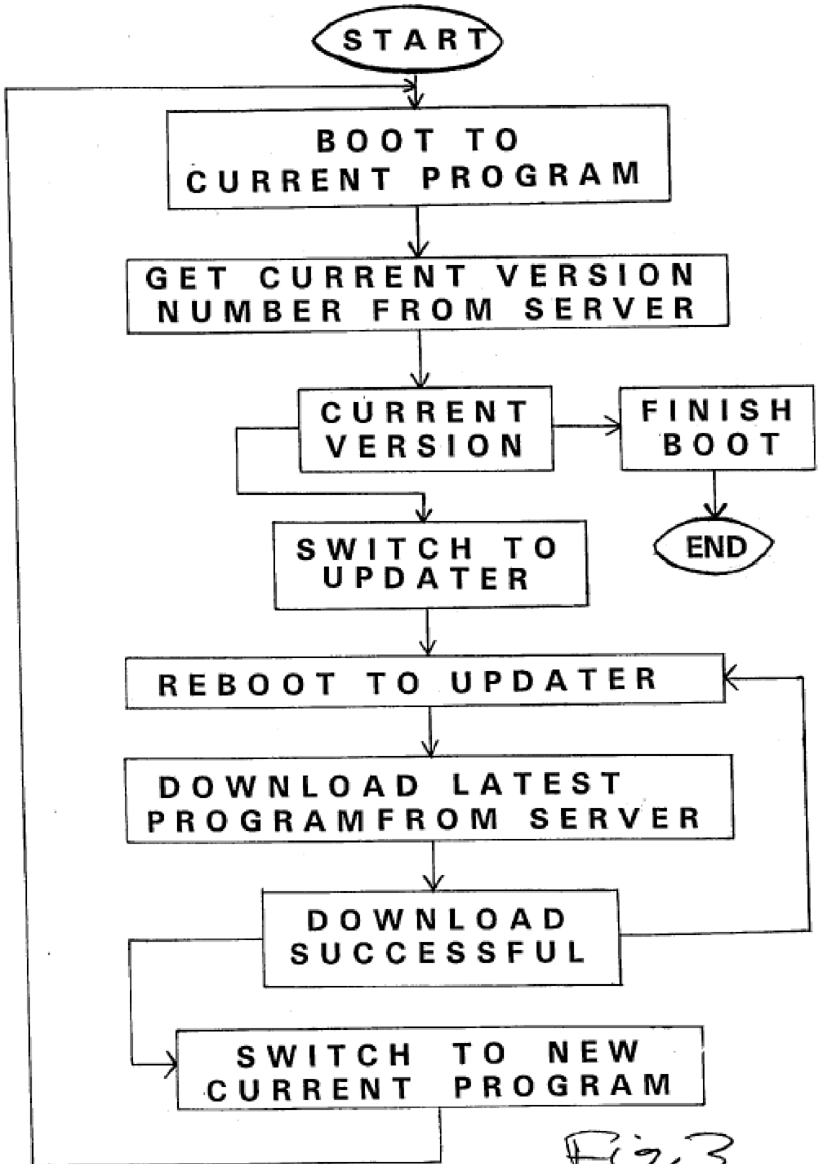

Fig. 3

1837. Dr. Johnson also asserts that Kikinis discloses this element, stating:

Kikinis discloses a service, including an apparatus and software, "that enables users who have purchased an Internet appliance such as a WEB phone, for example, to obtain third-party assistance in setting-up and configuring the device for successful operation." Kikinis at 4:22-27. "Such Internet appliances include any device that is used for accessing and operating on the Internet, or other types of switch-packet networks that may stand alone or be linked to the Internet. Examples are WEB phones, WEB TV's, Palm-top computers, Internet capable cell phones, Laptop computers, and so on." *Id.* at 4:43-48. When "a user plugs in a specific Internet appliance . . . and insures that all hardware and connections are correct . . . the user

> calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased. The appliance is then connected to server 21." *Id.* at 8:22-29. The server then communicates with the Internet appliance to perform set-up operations, which may include software updates. *Id.* at 8:41-60, 6:26-35.

Johnson ¶914.

1838. First, Kikinis is not analogous art, as it deals with a process to set up telephones. Also, as shown above, Kikinis discloses that a device can call a 1-800 number to get assistance, but only when a user performs the call, or when a user gives permission for the device to perform the call. Kikinis thus does not disclose an automatic process. Dr. Johnson, recognizing this, essentially says that it would be "obvious that obtaining the user's permission could be omitted." Johnson ¶915. There is no suggestion in Kikinis to omit how Kikinis is disclosed to operate, and Dr. Johnson appears to only state it would be obvious to do so based on hindsight and a need to try to reach this claim element, neither of which is a proper motivation to modify Kikinis.

1839. Dr. Johnson then states: "A POSITA would have been motivated to incorporate the teachings of any one of Criss, Kottapurath, or Kikinis with Bandaru," and that "POSITA would have understood that by automatically initiating communication with the DMF server, e.g., when the DMF is powered on and connected to the Internet, the DMF can more quickly receive information for configuring itself and begin running, while minimizing the need for user intervention." Johnson ¶916. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF somehow to connect to a server and obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

1840. Dr. Johnson is quite clear in where he believes updates will come from: "Moreover, it would have been obvious to a POSITA that the operating system software update could be obtained from the same server system that relays image data and preferences to the frame device." Johnson ¶674. However, this is flawed. The only possible server in Bandaru that might be used is the DMF server which has a user profile database. As has been pointed out, adding any additional tasks to this server is very problematic: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059. server 1050, or server 1062." Bandaru at 12:1-3. Bandaru contemplates having the user profile database/DMF network service on a DNS server. Adding the storing and updating of software to the DNS server would substantially degrade network performance.

1841. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Bandaru with one of Criss, Kottapurath, or Kikinis (although as indicated above, I do not agree that they necessarily could be combined), but does not provide sufficient reasons for why a POSITA *would* attempt such modifications to Bandaru.

1842. See also Section XIII.A.2 regarding claim 2 of the '573 Patent.

1843. For at least the reasons described in this section Bandaru alone or in combination with the other references does not anticipate or render obvious this claim limitation.

v. Claim [1.h] sending by said apparatus said unique identifier to said server system;

1844. For this element, Dr. Johnson merely refers back to his discussion of the '930 Patent, and states "Bandaru, in combination with Nishiyama, Elgamal, or RFC 2246" discloses this claim element.

1845. Dr. Johnson generally uses the same arguments as with respect to the unique identifier element of Claim 1 of the '930 Patent. Johnson ¶¶801-808. As was stated in reference to

claim 1 of the 930 patent, Dr. Johnson seems to admit that Bandaru does not explicitly teach this claim limitation, but asserts that "Bandaru discloses that the DMF network services includes a user profile database that stores the images added, deleted, selected, and/or subscribed to by the user within the user's profile as the corresponding DMF's default configuration, which necessarily requires a unique identifier for the corresponding DMF within the database." Johnson ¶745.

1846. While databases do require identifiers, the user profile database would only potentially require a unique identifier for the user (although Bandaru does not even disclose that), and not for the DMF device. Dr. Johnson goes on to assert: "For example, the DMF network services would need to maintain a mapping of DMFs in remote locations with user profiles maintained by the server to know to which DMFs the profiles correspond." Johnson ¶745. Again, Dr. Johnson seems to be at least tacitly acknowledging that Bandaru does not actually disclose this limitation. Furthermore, nothing in Bandaru even suggests any maintaining of a mapping of DMFs. Bandaru is also quite clear: the profiles described are user profiles, not DMF profiles.

1847. Tellingly, Bandaru II, a second Bandaru patent (6,535,228) I discussed in Section VI.F. with respect to the prosecution history of the Patents-in-Suit, discloses that each DMF "may be assigned a unique identification when the DMF is manufactured." Bandaru II at 15:37-39. This disclosure from Bandaru II is not prior art to the Patents-in-Suit, as Bandaru was filed after the Patents-in-Suit on July 21, 2000, as a CIP that added this new subject matter to its disclosure. This clearly shows that the Bandaru patent Dr. Johnson relies on as alleged prior art did not disclose or even contemplate using a unique identifier.

1848. Dr. Johnson then attempts to combine Nishiyama with Bandaru. As I explain throughout this report, Dr. Johnson ignores that Bandaru and Nishiyama are in entirely different

fields. The USPTO primary classification for Bandaru is 715/748. Class 715[148] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[149] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

1849. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Bandaru, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

1850. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the

[148] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[149] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

1851. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

1852. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶752. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *See, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier."), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

1853. For Dr. Johnson's combination of Bandaru with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Bandaru with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

1854. Suggesting that Bandaru needs or would benefit from Elgamal or RFC 2246 ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers,

telephone lines, television cables, and Internet servers or other types of networks." Bandaru 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1855. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[150] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[151] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1856. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1857. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

[150] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[151] *Id.*

1858. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1859. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1860. Even as of today, no authentication is needed to retrieve an image from an internet server.

1861. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1862. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1863. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

1864. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1865. See also Section XIII.A.4 regarding Claim 1 of the '930 Patent.

1866. For at least the reasons described in this section, Bandaru alone or in combination with Nishiyama, Elgamal, or RFC 2246 does not anticipate or render obvious this claim limitation.

vi. Claim [1.i] sending by said apparatus said version identifier to said server system;

1867. For this claim limitation, Dr. Johnson again, as in previous sections, asserts that Bandaru could be combined with one of Nishiyama, Criss, or Kottapurath to provide software updates, including sending a version identifier to a server.[152]

1868. Dr. Johnson states: "To the extent that Bandaru does not expressly disclose a software update method or process by which the DMF sends the version identifier of its software/computer readable instructions to the DMF network service, the concept of updating the software of a device from a server system using software version identifiers was a well-known method for managing client server systems before the earliest filing date of the '562 Patent." Johnson ¶1007.

1869. I do agree with Dr. Johnson that Bandaru does not disclose any method or process to obtain an update or to send a version identifier.

1870. Dr. Johnson combines, in the alternative, each of Nishiyama, Criss, and Kottapurath with Bandaru in an attempt to meet this claim element. However, it should be also noted that none of Nishiyama, Criss, and Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital display apparatuses. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing display apparatuses required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques,

[152] Johnson ¶791-800, 1007-1012.

such as client pull and server push techniques, were inadequate for the automated display apparatus design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

1871. The very section that Dr. Johnson points to in Nishiyama belies his interpretation. Dr. Johnson points to "Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20." Johnson ¶1010; Nishiyama at 36:6-8. This portion of Nishiyama states:

> 1-3-5. Remote Maintenance of Software of Terminal System 30 1. Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20.
>
> Note: when commercially available remote-access software is used, terminal systems 30 for installing software can be specified.

Nishiyama at 36:4-11.

1872. Nishiyama thus similarly discloses that remote maintenance can be performed on terminal systems by installing, modifying, updating, and maintaining the software via the network under control of the server using "commercially-available remote-access software." Nishiyama at 36:4-11. However, while Nishiyama discloses that software of terminals can be remotely updated, Nishiyama states this is done using "remote-access software," indicating software updates are installed from the server using such remote-access software. However, this claim element recites that the apparatus sends a version identifier, thus indicating the apparatus initiates the transmission, not that the server remotely accesses the apparatus to install updates.

1873. Also, as shown above, Nishiyama does not even disclose using a version identifier, and Dr. Johnson merely cites a portion of Nishiyama that states: "Software of the terminal system

30 can be updated, be maintained, be installed, and be modified for changing settings thereof," Johnson ¶1010 (citing Nishiyama at 36:4-11), which says nothing about a version identifier.

1874. As indicated above, Dr. Johnson also ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[153] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[154] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*. Nishiyama is thus not in the same field of endeavor as the Patents-in-Suit because Nishiyama is directed to providing video advertisements to public displays/billboards, whereas the Patents-in-Suit are in the field of consumer display apparatuses.

1875. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. A review of undergraduate computer science courses offered at Rice University,[155]

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[153] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[154] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

[155] https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p

where Dr. Johnson is a professor, shows not even a single course in Interactive Video Systems, or any video system at all. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Nishiyama.

1876. Using Dr. Johnson's own definition of a POSITA, it is clear that such a POSITA would not be capable of combining Nishiyama with any other art.

1877. Regarding Criss, Dr. Johnson argues that a POSITA would combine Criss with Bandaru such that Bandaru somehow provides a version identifier for its DMF software. First, the USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Bandaru. Criss is related to managing cellular networks, not to the field of consumer display apparatuses. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

1878. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request

_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

1879. However, as I have explained in Sections XIII.a and b, Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display apparatus simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Bandaru, this combination would not reach the claims of the Patents-in-Suit.

1880. Dr. Johnson also relies on Kottapurath. Johnson ¶1010. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Bandaru than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

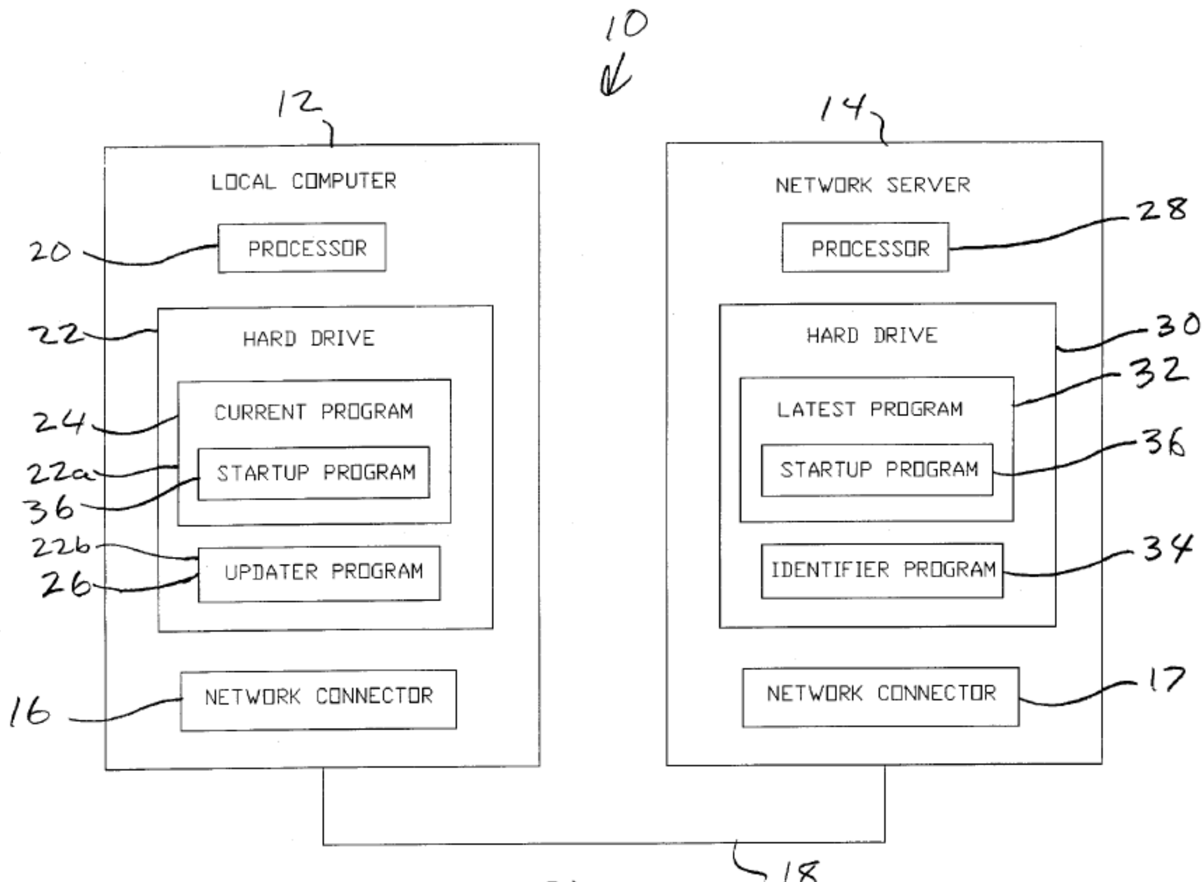

Fig. 1

1881. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Bandaru. Figure 3 of Kottapurath shows the process:

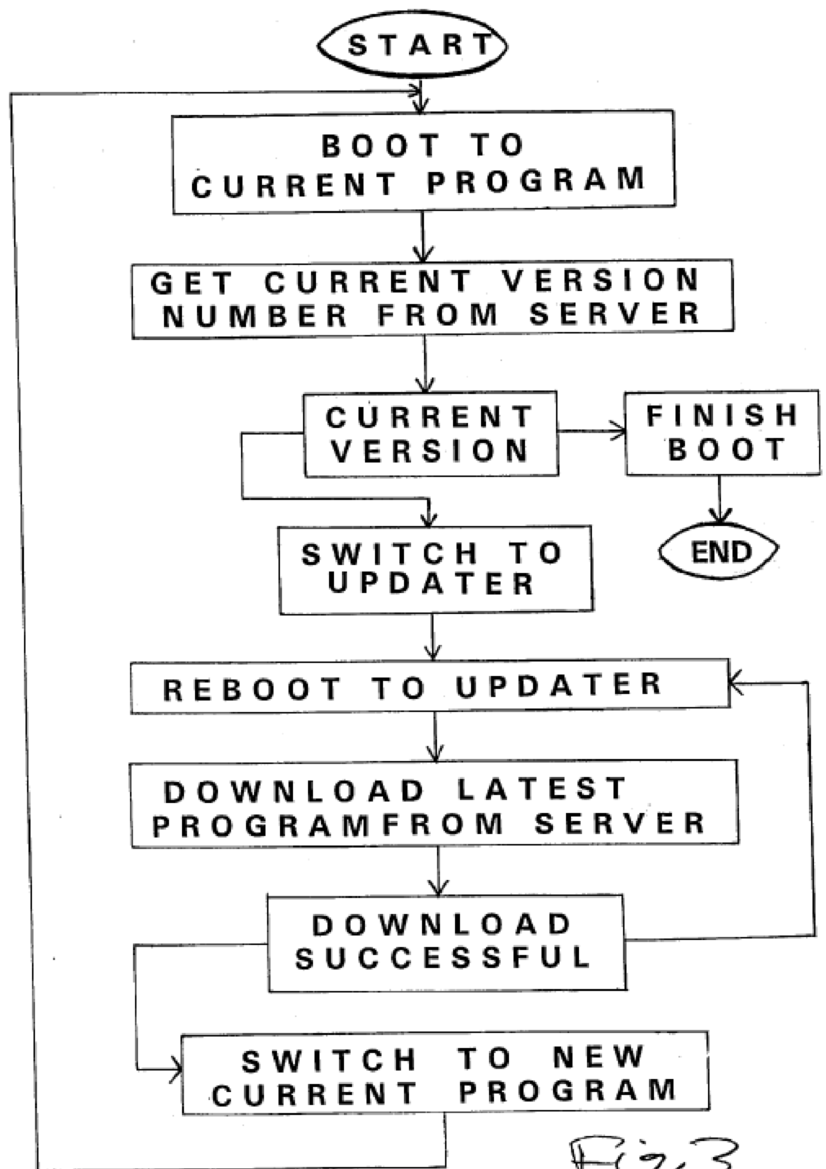

Fig. 3

1882. Dr. Johnson then states: "A POSITA, as of the earliest filing date of the '573 Patent, would have been motivated to combine the software update functions described in Nishiyama, Criss, and/or Kottapurath with Bandaru's client-server system (DMF-DMF network service) to provide DMF software updates through a central DMF network service." Johnson ¶665. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF

somehow to obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

1883. Dr. Johnson is quite clear in where he believes software updates will come from: "Moreover, it would have been obvious to a POSITA that the operating system software update could be obtained from the same server system that relays image data and preferences to the frame device." Johnson ¶674. However, this is flawed. The only possible server in Bandaru that might be used is the DMF server which has a user profile database. As has been pointed out, adding any additional tasks to this server is very problematic: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059. Server 1050, or server 1062." Bandaru at 12:1-3. Bandaru contemplates having the user profile database/DMF network service on a DNS server. Adding the storing and updating of software to the DNS server would substantially degrade network performance.

1884. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Bandaru with one of Nishiyama, Criss, and Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Bandaru.

1885. See also Section XIII.A.3 regarding claim 19 of the '573 Patent.

1886. For at least the reasons described in this section, Bandaru alone or in combination with Nishiyama, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

vii. Claim [1.j] prompting by said apparatus a user of said apparatus to create an account at said server system;

1887. For this element, Dr. Johnson merely refers back to his analysis regarding claim 6 of the '930 Patent. Johnson ¶1013.

1888. Dr. Johnson admits that "Bandaru does not expressly disclose wherein said digital display apparatus is configured to display an account initialization message," but asserts that "it would have been obvious to a POSITA, . . . to include a display function configured to display an account initialization message such as that found in Hoyle." Johnson ¶824.

1889. I first note that I agree with Dr. Johnson that Bandaru does not expressly disclose this claim limitation. I next note that Dr. Johnson asserts that Hoyle discloses that "a targeted advertisement display system may be configured to display a message asking of the user would like to set up a new account." Johnson ¶825 (citing Hoyle at 26:49-27).

1890. Dr. Johnson then states: "a POSITA would have found it obvious that the DMF of Bandaru could display an account initialization message similarly to the computer running targeted advertising software described in Hoyle."

1891. Even if one were to agree with Dr. Johnson that a POSITA *could* make this combination, Dr. Johnson provides no reason why a POSITA *would*. All Dr. Johnson points to is the fact that Hoyle discloses displaying an account initialization message when a user creates a new account. However, Dr. Johnson does not provide any reason why this would benefit Bandaru. Bandaru already has a DMF web page that can be used to specify profiles. Adding an additional step from Hoyle would simply make the combined device less user friendly by requiring unnecessary steps. Dr. Johnson provides no clear arguments why a POSITA would actually be motivated to modify Bandaru in this way, nor in what part of Bandaru's process this step would be practically performed.

1892. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner

asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

1893. For at least the reasons described in this section, Bandaru alone or in combination with Hoyle does not anticipate or render obvious this claim limitation.

viii. Claim [1.k] receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system; [1.l] updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions;

1894. For these elements, Dr. Johnson refers back to his analysis regarding software updates with respect to the ’930 and ’656 Patents. Johnson ¶¶1014-1015.

1895. Dr. Johnson states: “Although Bandaru does not expressly disclose a method or process by which the DMF obtains an update of the DMF’s operating system software from the DMF network service, the concept of updating the operating system of a device from a server system was a well-known method for managing client-server systems before the earliest filing date of the ’573 Patent.” Johnson ¶655.

1896. I do agree with Dr. Johnson that Bandaru does not disclose any method or process to obtain an update.

1897. Dr. Johnson combines, in the alternative, each of Nishiyama, Criss, and Kottapurath with Bandaru in an attempt to meet this claim element. However, it should be also noted that none of Nishiyama, Criss, and Kottapurath are in the same field of endeavor as the Patents-in-Suit: personal display apparatuses. I understand that, if a reference is not in the same

field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing display apparatuses required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated display apparatus design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

1898. Dr. Johnson first discusses Nishiyama. Johnson ¶¶657-658. However, the very section that Dr. Johnson points to in Nishiyama belies his interpretation. Dr. Johnson points to "Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20." Nishiyama at 36:6-8. This portion of Nishiyama states:

> 1-3-5. Remote Maintenance of Software of Terminal System 30 1. Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20.
>
> Note: when commercially available remote-access software is used, terminal systems 30 for installing software can be specified.

Nishiyama at 36:4-11.

1899. Nishiyama thus similarly discloses that remote maintenance can be performed on terminal systems by installing, modifying, updating, and maintaining the software via the network under control of the server using "commercially-available remote-access software." Nishiyama at 36:4-11. However, while Nishiyama discloses that software of terminals can be remotely updated,

Nishiyama states this is done using "remote-access software," indicating software updates are installed from the server using such remote-access software. However, this claim element recites that the display apparatus obtains an update for its onboard, indicating it initiates the request, not that the server remotely accesses the display apparatus to install updates.

1900. As indicated above, Dr. Johnson also ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[156] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[157] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*. Nishiyama is thus not in the same field of endeavor as the Patents-in-Suit because Nishiyama is directed to providing video advertisements to public displays/billboards, whereas the Patents-in-Suit are in the field of consumer display apparatuses.

1901. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of

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[156] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[157] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

Nishiyama. A review of undergraduate computer science courses offered at Rice University,[158] where Dr. Johnson is a professor, shows not even a single course in Interactive Video Systems, or any video system at all. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Nishiyama.

1902. Using Dr. Johnson's own definition of a POSITA, it is clear that such a POSITA would not be capable of combining Nishiyama with any other art.

1903. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine Criss with Bandaru. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Bandaru. Criss is related to managing cellular networks, not to the field of consumer display apparatuses. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

1904. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP

158 https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

1905. The claim requires that the display apparatus initiate receiving of software updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display apparatus simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Bandaru, this combination would not reach the claims of the Patents-in-Suit.

1906. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶663-664. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Bandaru than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First,

the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

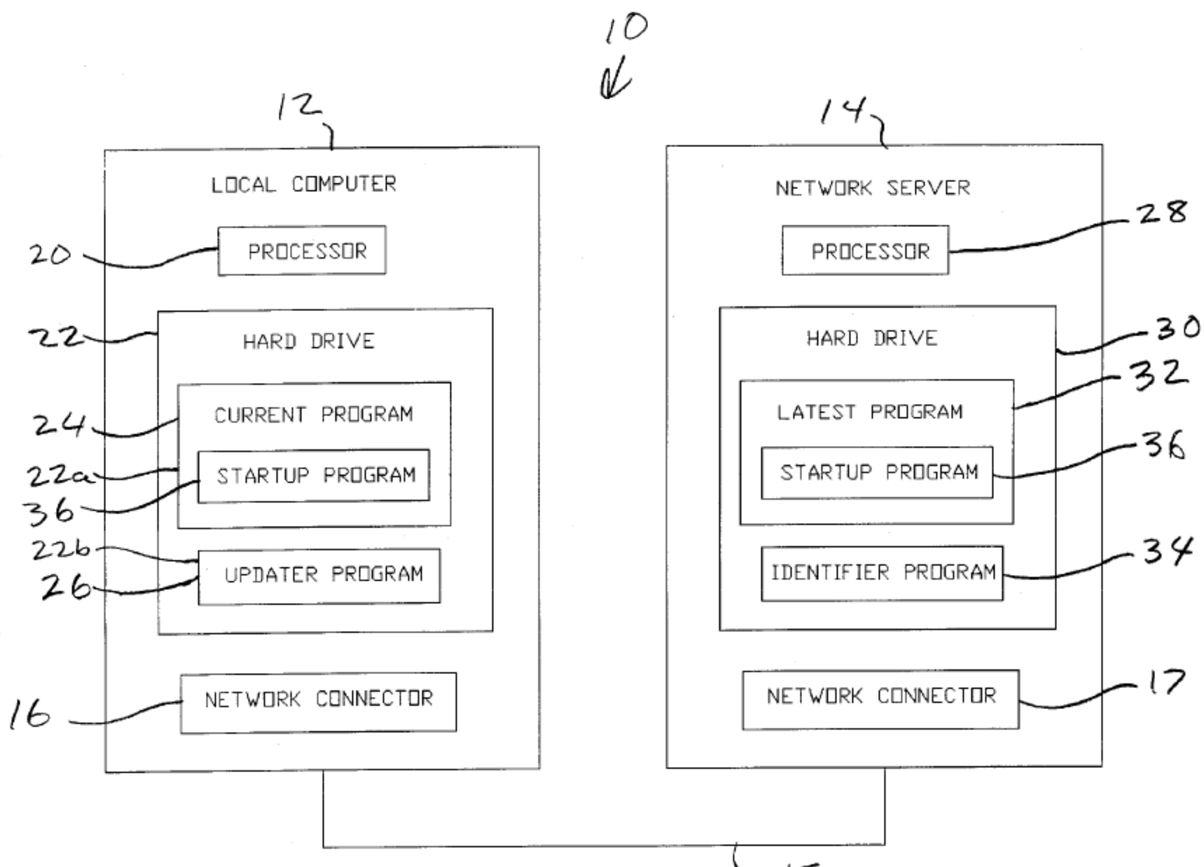

Fig. 1

1907. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Bandaru. Figure 3 of Kottapurath shows the process:

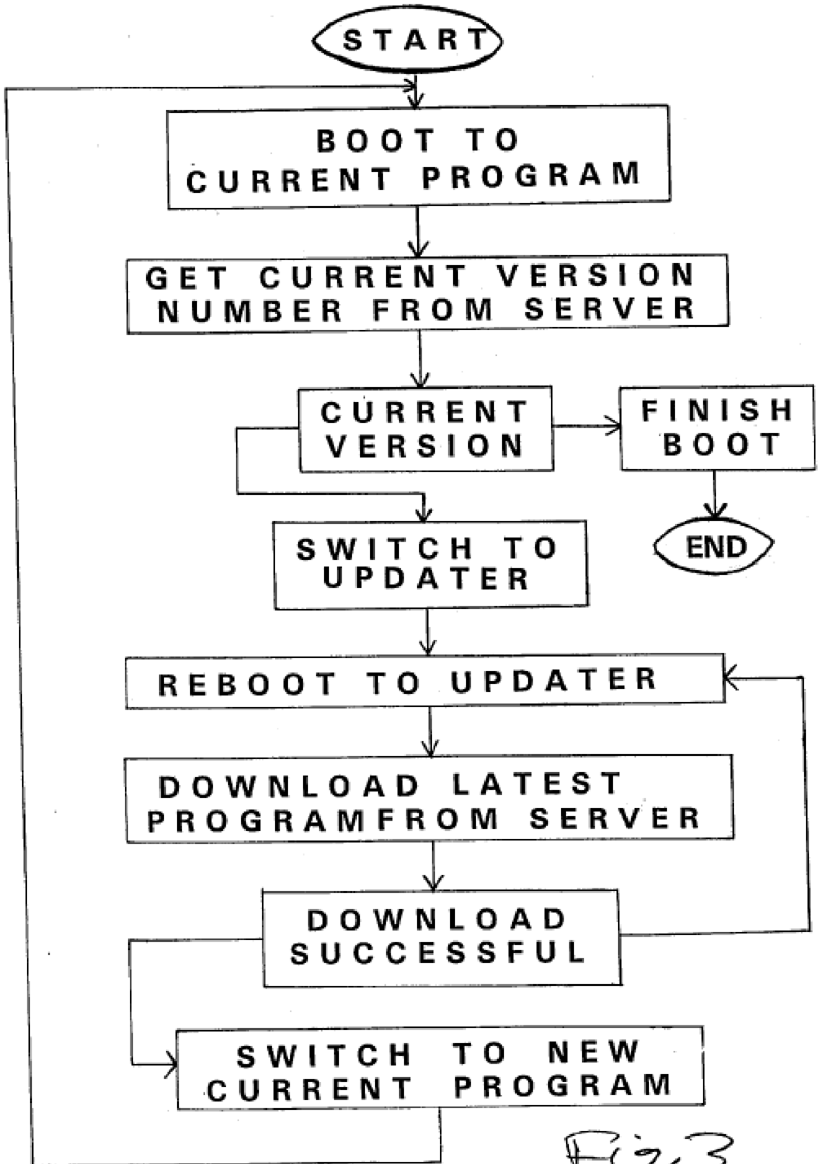

Fig. 3

1908. Dr. Johnson then states: "A POSITA, as of the earliest filing date of the '573 Patent, would have been motivated to combine the software update functions described in Nishiyama, Criss, and/or Kottapurath with Bandaru's client-server system (DMF-DMF network service) to provide DMF software updates through a central DMF network service." Johnson ¶665. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF

somehow to obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

1909. Dr. Johnson is quite clear in where he believes updates will come from: "Moreover, it would have been obvious to a POSITA that the operating system software update could be obtained from the same server system that relays image data and preferences to the frame device." Johnson ¶674. However, this is flawed. The only possible server in Bandaru that might be used is the DMF server which has a user profile database. As has been pointed out, adding any additional tasks to this server is very problematic: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059. Server 1050, or server 1062." Bandaru at 12:1-3. Bandaru contemplates having the user profile database/DMF network service on a DNS server. Adding the storing and updating of software to the DNS server would substantially degrade network performance.

1910. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Bandaru with one of Nishiyama, Criss, and Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Bandaru.

1911. See also Section XIII.A.3 regarding claim 19 of the '573 Patent.

1912. For at least the reasons described in this section, Bandaru alone or in combination with Nishiyama, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

ix. Claim [1.m] receiving by said apparatus updated content from said server system;

1913. For this element, Dr. Johnson alleges that Bandaru discloses that its DMF device receives content such as images from the DMF server discloses in Bandaru. Johnson ¶¶1016-1020.

1914. Dr. Johnson states:

> Bandaru discloses that the DMF receives content (e.g., image data) from various external input devices, such as the DMF network service and Internet servers. For example:
>
> The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks. Upon receipt of the image data, the DMF generates auxiliary information relating to each image and stores the image together with the auxiliary information in the memory. The DMF, subsequently, fetches the image data from the memory with the auxiliary information and displays the images on a display.

Johnson ¶1017 (quoting Bandaru at 2:64-3:10).

1915. Dr. Johnson also refers back to his report regarding claim 1 of the ’573 Patent, stating that Bandaru renders obvious periodically relaying image data to the DMF. Johnson ¶1019. In this prior section, in paragraph 568 of his report, he states:

> Moreover, Bandaru discloses that after the user uses the PC to request DMF network service, “DMF network service 1058 provides services directly to DMF 1052 after it receives the request.” *Id.* at 12:22-24; see also *id.* at 4:1-17 (describing capture and transfer of image data from Internet servers to DMF in FIG. 2).

Johnson ¶568.

1916. First, Dr. Johnson is taking this language out of context. The “request” described at 12:22-24 of Bandaru is initiated by a user:

- “To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through the DMF network service 1058.” Bandaru at 12:3-5.
- “Once DMF network service 1058 is initiated, it allows the user to use the services.” Bandaru at 12:7-9.
- “PC 1050 can also be used to request DMF network service 1058 for DMF 1052. In one embodiment, DMF network service 1058 provides services directly to DMF 1052 after it receives the request. In another embodiment, DMF network service 1058 provides services to DMF 1052 through PC 1050.” Bandaru at 12:21-26.

1917. As shown above, the "request" pointed to by Dr. Johnson is not automatic nor made by a display apparatus but is initiated manually by a user and via PC 1050. Bandaru's process is thus not automatic. It is done manually when the user sends a request.

1918. Dr. Johnson goes on to point to various elements of Bandaru he believes are requests for images. But none of the portions he cites are automatic. Rather, they are manual. It should also be noted that the word "automatic" does not appear in Bandaru.

1919. Bandaru does not explain exactly how a DMF receives images associated with the DMF. Bandaru describes that communications between the DMF and other devices can be "one-way" similar to "a pager type of communication," or "two-way" in which "the process invokes the DMF two-way interactive program to handle the data." Bandaru at 12:48-64. No other functionality of the two-way program is described. Bandaru merely describes that images are "forwarded" from a device such as a PC to the DMF:

> The camera 110 can either be a digital or a video camera. In one embodiment, the camera 110 can directly transfer the captured image to the DMF using conventional transmission media, such as, for example, wireless, cable, or removable media. In another embodiment, the camera 110 can first transfer the captured images to a computer 112 and the computer 112, subsequently, transfers the image data to the DMP 102. The advantage of using a computer 112 as a forwarding station between the camera 110 and the DMF 102 is to perform some functions where the DMF 102 is unable to perform, such as data conversion.

Bandaru at 3:31-41.

1920. Similarly, the claims of Bandaru only describe that images are "forwarded," "transmitted," or "provided to" the DMF. Bandaru simply does not disclose an automatic request/response communication protocol.

1921. Dr. Johnson appears to admit this in paragraph 573 of his report when he asserts: "To the extent Bandaru does not expressly disclose that the user's preferences and image data are periodically relayed by the DMF server system to the DMF, it is my opinion that it would have

been obvious to a POSITA for the DMF server system to periodically relay such images and preferences to the DMF as periodic updates for advertisements, weather, stock trading news, headline news, daily news summaries, and interactive online gambling and consistent with the subscribed image data categories."

1922. However, most of the information Dr. Johnson points to in Bandaru is merely textual information, including weather, stocks, headlines, interactive gambling (part of the interactive section 826), Bandaru at 11:34-40, and advertisements, are, as shown in FIG. 8 of Bandaru, below, textual (i.e., not images) information provided as part of textural representation 808. This is made even more clear in figure 8 of Bandaru:

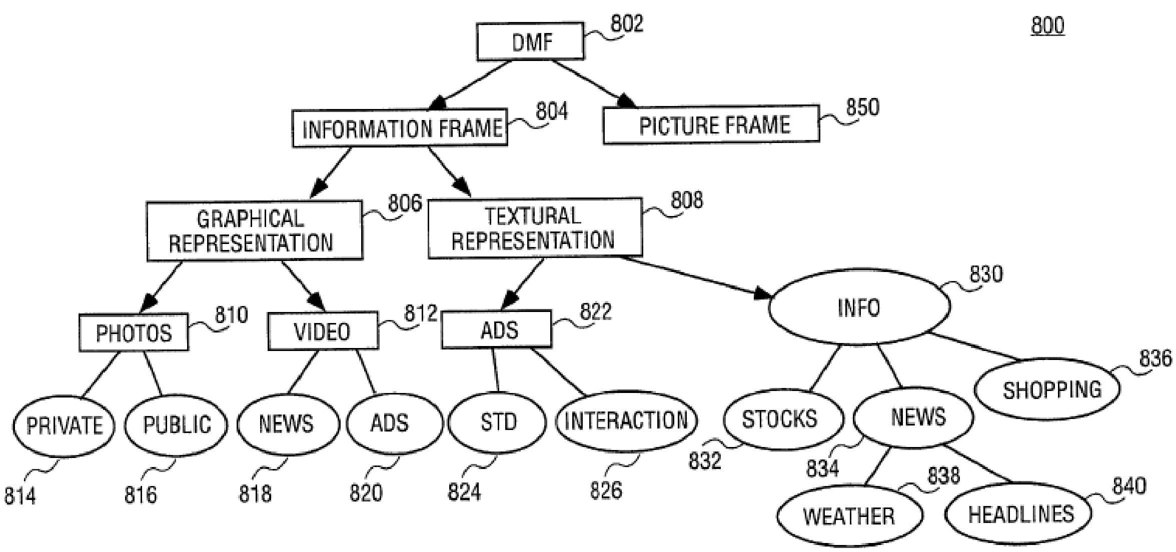

FIG. 8

1923. Dr. Johnson is conflating information from 830 with pictures from 850.

1924. The modes are described as: "While in the pictorial mode of DMF displays a sequence of predefined pictures, the information mode of DMP displays a set of information or

data such as news, financial data, and the like." Bandaru at 9:50-53. (Note: DMP is in Bandaru, but I assume this is a typo and should read DMF).

1925. Bandaru goes on to further describe a financial mode: "Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, such categories can include news, sports, entertainment, financial data, et cetera." Bandaru at 9:63-65.

1926. Also, Bandaru simply does not disclose any periodic or automatic relay of images. Even if one agrees with Dr. Johnson that relaying of information such as "advertisements, weather, stock trading news, headline news, daily news summaries, and interactive gambling" would be periodic, there is no description in Bandaru of how the transmission of such data would occur, given Bandaru is silent regarding any periodic or automatic relay of any data. This claim element requires that the periodic relay of data is in response to a request, and, given Bandaru does not disclose anything regarding periodic or automatic relay of images, there is no suggestion of any request being made by the DMF. Data can be transmitted in various ways, such as a server push. Bandaru simply does not disclose or suggest the specific claim language of this claim element.

1927. Dr. Johnson then refers to the portion of Bandaru, again, regarding the different devices that can communicate with the DMF services: "In one embodiment, a user may use the telephone 1054 to initiate DMF network service 1058. Once DMF network service 1058 is initiated, it allows the user to use the services, such as reconfiguration of DMF. For example, when DMF 1052 needs to be reconfigured, DMF network services 1058 supplies a DMF web page and allows a user to select options from the DMF web page to configure DMF 1052. It should be noted that communication between DMF 1052 and DMF network service 1058 is carried out through the Internet 1056." Bandaru at 12:6-11.

1928. Dr. Johnson also points to Bandaru at 12:15-20. Johnson ¶608. That excerpt from Bandaru states: "In another embodiment, a request for DMF network Service 1058 from DMF 1052 can be initiated via a direct connection. A direct connection is a cable or a modem that is directly connected between DNS 1059 and DMF 1052. The Internet 1056 can be an alternative connection between DNS 1059 and DMF 1052."

1929. Nothing in that section discloses, or even suggests anything occurring automatically. Aside from the fact that the terms "automatic" and "automatically" do not appear anywhere in Bandaru, a POSITA would understand that Bandaru actually teaches away from such automatic activity.

1930. The term "modem" is one that a POSITA would be very familiar with, and in fact most lay persons would be familiar with. Modems are not even always connected. One initiates a connection for a particular period of time, then ends that connection. Without an automatic initiation of communication, one could not have any automatic transmission.

1931. Again, a user utilizing a telephone or web page to manually conduct some activity is not *automatic*. Furthermore, Bandaru is again quite clear on the type of connection he contemplated: "Network-communicating device 710 may be a modem or a cordless modem, such as a cellular modem. In one embodiment, network-communicating device 710 is a one-way transmitting device, such as a pager type of one-way communication device. In another embodiment, network-communicating device 710 is a two-way communicating device, which may facilitate an interactive communication between devices. In one embodiment, DMF 701 uses a cellular modem to communicate with PC 712, DMF 714, and entity 716 or DMF Server 720." Bandaru at 10:20-29.

1932. As shown above, Bandaru even contemplates a cellular modem. Bandaru was issued on December 26, 2006, and filed on October 16, 2001. Anyone using a cellular device in that time frame would know that one had to pay for every minute of usage. Doing anything automatically would use up time and increase the cost of the cellular plan. It is therefore unsurprising that Bandaru does not disclose doing anything automatically.

1933. Dr. Johnson also refers in his report to a portion of Bandaru disclosing that a user can add an image to the DMF by moving the corresponding icon or thumbnail from a global storage to the DMF storage. Johnson ¶576. A POSITA would again understand that this is an entirely manual process; it does not involve sending image data in response to a display apparatus *automatically* issuing a request.

1934. Dr. Johnson also, rather inexplicably, discusses a DMF doing some level of configuration automatically. Again, I first note that the term "automatic" does not appear in Bandaru. Setting that to one side, at most, what Dr. Johnson is pointing to is about configuring the DMF device, not about automatically requesting and sending image data.

1935. Dr. Johnson attempts to bolster his assertion stating: "For example, as discussed above, it would have been obvious for the DMF to automatically issue a request for image data corresponding to a subscription installment to the DMF network service (e.g., according to a client pull model), in accordance with periodic time intervals specified by the subscription." Johnson ¶578.

1936. I first note that "subscription installment" does not appear in Bandaru. In *one* place, Bandaru states that a user can subscribe to categories of images. Bandaru at 10:44-50. Bandaru also does not disclose a "client pull model." Nothing in the description in Bandaru discloses or

suggests automatically requesting images by the DMF. Rather, Bandaru simply discloses that one can have specific categories of images one is interested in.

1937. Also, Bandaru does not disclose or suggest receiving in response to said request for image data "a set of data from said first remote server system comprising one or more image data files."

1938. Dr. Johnson asserts: "a POSITA would have understood that the user profile managed by the DMF server includes image data of the images added by the user…" because the user profile in Bandaru "stores the selected categories or websites." Johnson ¶¶597-98. However, as I have explained regarding the other claim elements, nothing in Bandaru suggests that the user profile would contain image data; Bandaru only discloses that the DMF server and user profile store *selected categories or websites*, Bandaru at 10:51-60, that is, merely "references" and not actual images. Bandaru at 14:6-7 (claim 1). The term "user profile" appears 16 times in Bandaru. Bandaru refers to a user profile database, Bandaru at 10:42-43, 10:58-64, 12:1-5, user profile storing categories, Bandaru at 10:52-56, user profile being related to a menu. Bandaru at 13:18-23. But none of these portions of Bandaru disclose, or even suggest, that the user profile contains any actual image data.

1939. Bandaru specifically states: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059, server 1050, or server 1062. To access user profiles, a user may use a PC, 1050, a DMF 1052 or a telephone 1054 to access the user profile through DMF network service 1058." Bandaru at 12:1-5. A POSITA would immediately recognize that if the user profiles can be physically located on a DNS server, they would not contain image data. This becomes clear when one considers what a DNS server does.

1940. The Lab notes for Rice University Comp 321: Introduction to Computer Systems, state:

> IP addresses are difficult for humans to remember, so the Domain Name System (DNS) is used to provide a mapping between easy to remember textual domain names (sometimes simply called hostnames) and IP addresses. A domain name consists a hierarchical sequence of textual labels that are separated by dots, with the right-most label identifying the top-level domain for the name. For example, rice.edu, cs.rice.edu, and www.cs.rice.edu are all examples of different domain names that belong to the edu top-level domain. The name rice.edu refers to the rice subdomain of edu, the name cs.rice.edu refers to the cs subdomain of rice.edu, and the name www.cs.rice.edu refers to the www subdomain of cs.rice.edu. Other top-level domain names include com, org, and net.[159]

1941. Every time one visits a web page, or sends an email, the DNS server must be consulted in order to retrieve the IP address of the target server. This means that DNS servers tend to get a very large amount of traffic. Storing image data on such a server would be a serious mistake as it would take up substantial storage space on the server, and would unduly tax traffic to the server. If, however, a user profile is just some information about a user, and does not contain image data, then storing the profile on a DNS server would not be contraindicated.

1942. Not only does Bandaru not disclose the user profile including image data, but a POSITA would understand that attempting to include image data with the user profile would render some embodiments of Bandaru untenable. My analysis here also applies to the other claim elements regarding "a user interface . . . configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system," as, again, Bandaru does not disclose storing actual image data on its DMF server.

[159] https://www.clear.rice.edu/comp321/html/laboratories/lab11/

1943. While Dr. Johnson repeats the assertion that the user profile in Bandaru contains image data, Johnson ¶¶598-99, Bandaru does not actually disclose the user profile containing image data.

1944. There are standard internet servers from which a user can *retrieve* images. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1945. A POSITA would readily understand that there is no way for Bandaru's DMF server to cause various internet servers to generate a set of data comprising image data files.

1946. A POSITA would further understand that the DMF server of Bandaru stores user profiles, but does not store images. I note that Dr. Johnson does not cite any part of Bandaru that discloses images being on the DMF server.

1947. See also Section XIII.A.2 regarding claim 2 of the '573 Patent.

1948. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

x. Claim [1.n] displaying by said apparatus said updated content on said display screen.

1949. Dr. Johnson asserts that Bandaru's DMF can display images it receives. Johnson ¶1022. However, since, as I explained above, Bandaru does not disclose "receiving by said

apparatus updated content from said server system," Bandaru also does not disclose this claim element of displaying ***said*** updated content.

1950. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

xi. Claim [11.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to transmit metadata to said server system.

1951. Dr. Johnson asserts: "Bandaru, alone or in combination with Nishiyama, Elgamal, or RFC 2246, discloses that the computer readable instructions comprise instructions for causing said apparatus to transmit metadata to said server system A POSITA would first note that the term metadata does not appear in Bandaru nor in Nishiyama."

1952. Dr. Johnson cites a portion of the '562 Patent description of metadata. However, in his citation he omits key portions. The full citation is given here, with the parts Dr. Johnson omitted emphasized "***A package may also contain metadata about frame device 200. For example,*** some or all of the information stored in flash memory and/or DRAM may be inserted into a metadata file. The metadata file may contain, for example, a unique frame identifier, a relative clock time, a lights on clock tick, a lights out clock tick, a connect time, connection information, slide show information, log information, name server information, image information an image display list, and error information. Other information utilized by the frame device and/or any of the server systems may also be placed into the metadata file. ***The package server 271 may also generate packages that contain content and formatting data (e.g., image and/or text data)***." '562 Patent at 17:60-18:5. A POSITA would immediately understand that the elements Dr. Johnson omitted are rather important.

1953. For this claim limitation, Dr. Johnson points to Bandaru; however, none of what Dr. Johnson points to is information ***about frame device 200.*** Dr. Johnson appears to tacitly admit

this stating: "POSITA would have understood that the options selected by the user to define the user profile correspond to metadata, as they indicate information utilized by the DMF such as image information." Johnson ¶1053. Dr. Johnson does not even assert that there is information about the frame device.

1954. Dr. Johnson then states: "In addition, the POSITA would have understood that when the user initiates a request for DMF network services from the DMF, the user's selections are metadata transmitted from the apparatus/DMF to the server system (DMF server), to store the DMF's metadata as part of the user profile stored by the DMF network service to facilitate reconfiguring the DMF. See Bandaru at 9:60-10:5."

1955. A POSITA would recognize that what is being described here is information being displayed on the DMF, not sent by the DMF. That excerpt from Bandaru is shown here "As discussed previously, DMF is capable of sending and receiving information over a network, such as the Internet. Various categories of information that are available over the Internet are also available to DMF. Accordingly, DMF, in one embodiment, can display several categories of information when it is in the information mode. For example, Such categories can include news, sports, entertainment, financial data, et cetera. However, in order to display multiple categories of information in the information mode, DMF has to be set up or configured to handle multiple sets of information. In one embodiment, the information mode of DMF is configured through a DMF server, as will be described in more detail below."

1956. Dr. Johnson goes on to discuss a user selecting websites to view, using services including reconfiguration of the DMF, etc. But none of what Dr. Johnson points to is metadata, nor is it metadata about a frame device.

1957. Dr. Johnson goes on to assert that Bandaru in view of Nishiyama, Elgamal, and or RFC 2246 disclose a unique identifier, and then asserts that this unique identifier is metadata. Dr. Johnson provides no detail on this argument other than to refer back to claim 1h and claim 2 of the ’930 Patent.

1958. Claim 1h of the ’930 Patent is discussed in Dr. Johnson’s report beginning at paragraph 767. That claim limitation is: “communication circuitry configured to engage a network medium in said inside of said integrated housing under the control of said processor.” A POSITA would understand that this claim limitation is not directed towards metadata nor towards any unique identifier. And indeed, in the five paragraphs Dr. Johnson spends on this claim limitation, he does not mention either metadata nor any type of identifier. It is unclear how Dr. Johnson believes this might be relevant to claim 11 of the ’562 Patent.

1959. Dr. Johnson begins discussion of claim 2 of the ’930 Patent at paragraph 801 of his report. That claim limitation is: “The digital display apparatus of claim 1, wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system.”

1960. Nishiyama discusses “identification numbers of the terminal systems” (Nishiyama 13:41). However, Dr. Johnson does not even attempt to articulate why these would fulfill the limitations of claim 11 of the ’562 Patent, nor why a POSITA would seek to combine Bandaru and Nishiyama.

1961. As has been discussed previously in this report, Nishiyama is in an entirely different field than Bandaru and a POSITA, as defined by Dr. Johnson, would likely not be skilled in the areas of technology covered by Nishiyama. A POSITA would notice that the USPTO primary

classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[160] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. A review of undergraduate computer science courses offered at Rice University,[161] where Dr. Johnson is a professor, shows not even a single course in Interactive Video Systems, or any video system at all. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Nishayama.

1962. Also, as has been discussed previously in this report, combining Bandaru with either Elgamal or RFC 2246 is contraindicated. The manner in which the DMF of Bandaru receives images does not necessitate any authentication: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

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[160] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

[161] https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

1963. "Telephone" is mentioned 5 times in Bandaru, including cellular (Bandaru 10:20-28). When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

1964. Even setting that issue to one side, receiving an image from an internet server does appear in Bandaru. However, this is a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru 4:24-36 (emphasis added)

1965. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

A. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

B. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

C. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

D. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

E. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1966. Even as of today, no authentication is needed to retrieve an image from an internet server.

1967. It must first be appreciated that Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

1968. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

1969. RFC 2246, for example, states "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." Elgamal describes X.509 certificates (Elgamal 30:15-35).

1970. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would

be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

1971. For at least the reasons described in this section, Bandaru does not anticipate or render obvious this claim limitation.

xii. Claim [20.] The apparatus of claim 1 wherein said updated computer readable instructions comprise instructions for adding new functionality to said apparatus.

1972. For this claim limitation, Dr. Johnson again refers to and reuses his analysis regarding the '573 Patent and the '930, asserting that Bandaru could be combined with one of Nishiyama, Criss, or Kottapurath to provide software updates.[162]

1973. Dr. Johnson states: "Although Bandaru does not expressly disclose a method or process by which the DMF obtains an update of the DMF's operating system software from the DMF network service, the concept of updating the operating system of a device from a server system was a well-known method for managing client-server systems before the earliest filing date of the '573 Patent."[163]

1974. I do agree with Dr. Johnson that Bandaru does not disclose any method or process to obtain an update.

1975. Dr. Johnson combines, in the alternative, each of Nishiyama, Criss, and Kottapurath with Bandaru in an attempt to meet this claim element. However, it should be also noted that none of Nishiyama, Criss, and Kottapurath are in the same field of endeavor as the Patents-in-Suit: personal display apparatuses. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent

[162] Johnson ¶791-800.

[163] Johnson ¶655.

to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing display apparatuses required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated display apparatus design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

1976. Dr. Johnson first discusses Nishiyama. Johnson ¶¶657-658. However, the very section that Dr. Johnson points to in Nishiyama belies his interpretation. Dr. Johnson points to "Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20." Nishiyama at 36:6-8. This portion of Nishiyama states:

> 1-3-5. Remote Maintenance of Software of Terminal System 30 1. Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20.
>
> Note: when commercially available remote-access software is used, terminal systems 30 for installing software can be specified.

Nishiyama, 36:4-11.

1977. Nishiyama thus similarly discloses that remote maintenance can be performed on terminal systems by installing, modifying, updating, and maintaining the software via the network under control of the server using "commercially-available remote-access software." Nishiyama at 36:4-11. However, while Nishiyama discloses that software of terminals can be remotely updated, Nishiyama states this is done using "remote-access software," indicating software updates are

installed from the server using such remote-access software. However, this claim element recites that the display apparatus obtains an update for its onboard, indicating it initiates the request, not that the server remotely accesses the display apparatus to install updates.

1978. As indicated above, Dr. Johnson also ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[164] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[165] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*. Nishiyama is thus not in the same field of endeavor as the Patents-in-Suit because Nishiyama is directed to providing video advertisements to public displays/billboards, whereas the Patents-in-Suit are in the field of consumer display apparatuses.

1979. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of

[164] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

[165] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

Nishiyama. A review of undergraduate computer science courses offered at Rice University,[166] where Dr. Johnson is a professor, shows not even a single course in Interactive Video Systems, or any video system at all. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Nishiyama.

1980. Using Dr. Johnson's own definition of a POSITA, it is clear that such a POSITA would not be capable of combining Nishiyama with any other art.

1981. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine Criss with Bandaru. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Bandaru. Criss is related to managing cellular networks, not to the field of consumer display apparatuses. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

1982. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since

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[166]https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

1983. The claim requires the apparatus to initiate receiving of software updates that are used to add new functionality, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display apparatus simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Bandaru, this combination would not reach the claims of the Patents-in-Suit.

1984. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶663-664. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Bandaru than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

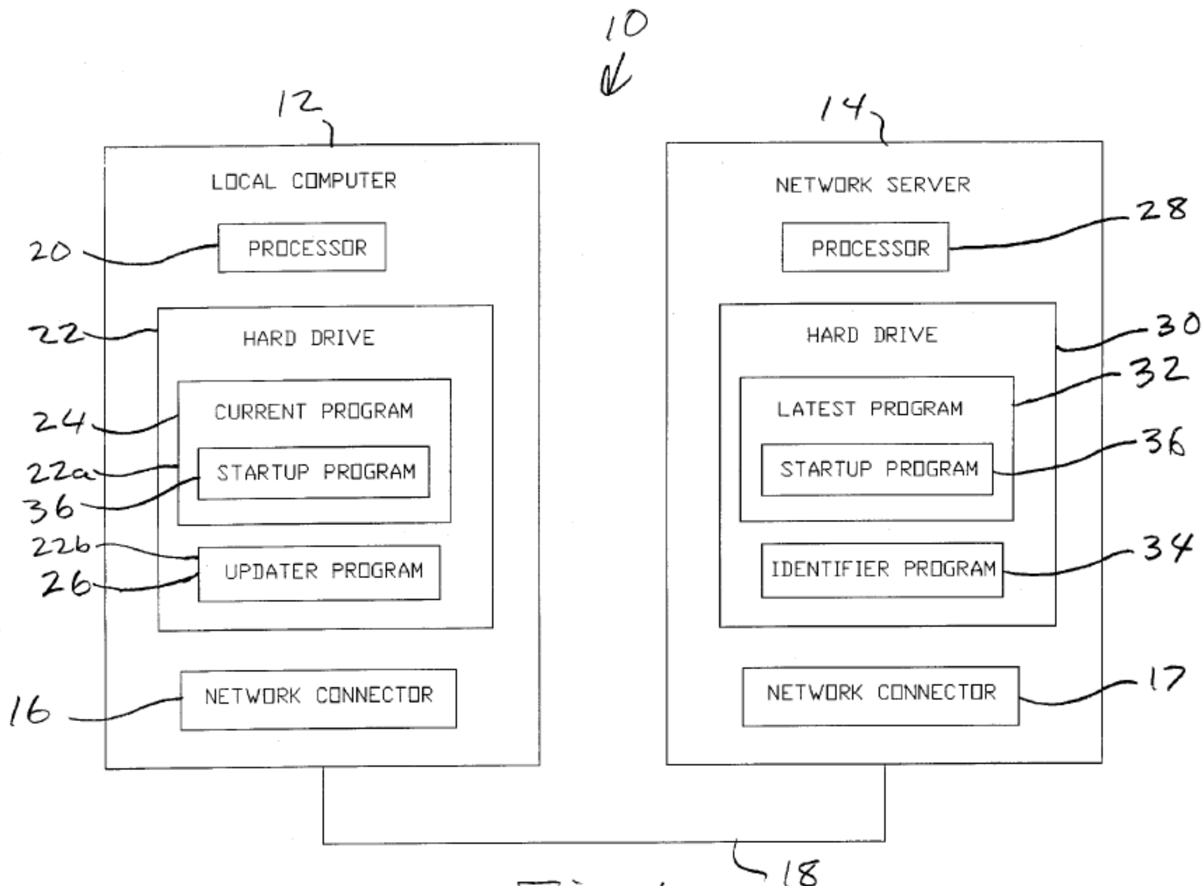

Fig. 1

1985. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Bandaru. Figure 3 of Kottapurath shows the process:

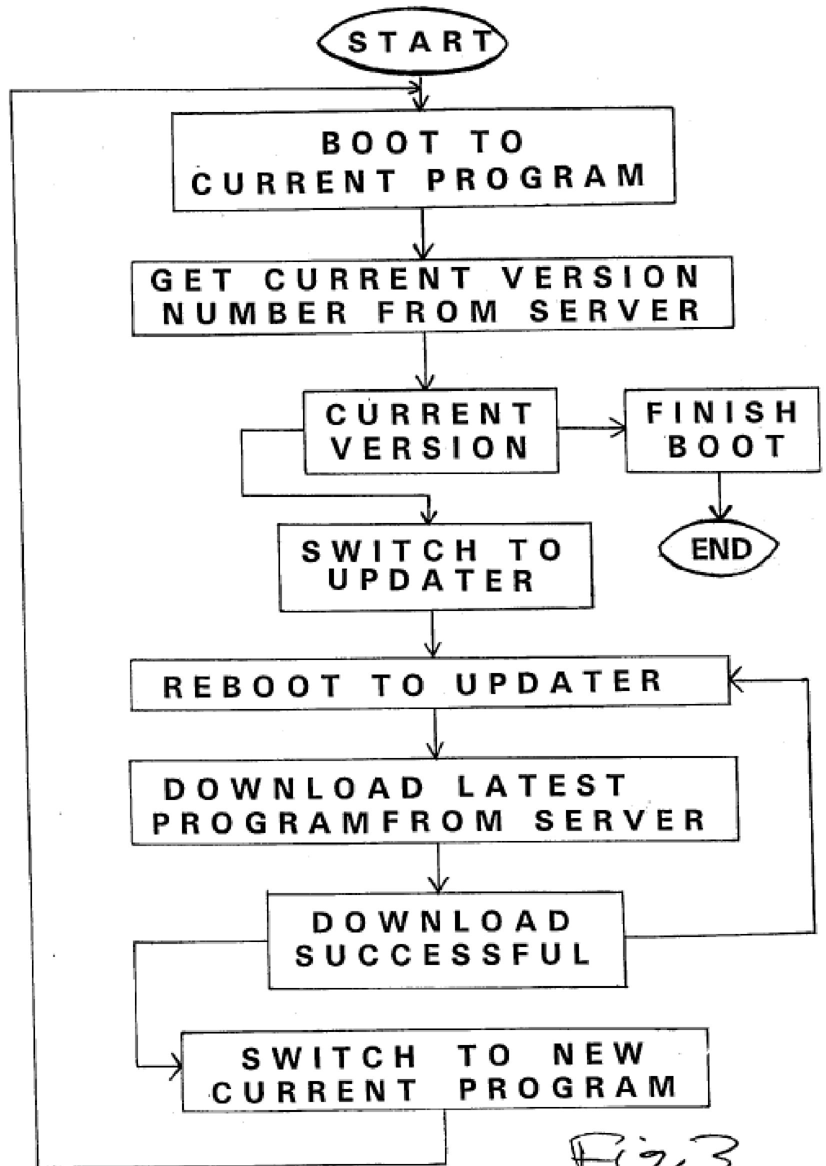

Fig. 3

1986. Dr. Johnson then states: "A POSITA, as of the earliest filing date of the '573 Patent, would have been motivated to combine the software update functions described in Nishiyama, Criss, and/or Kottapurath with Bandaru's client-server system (DMF-DMF network service) to provide DMF software updates through a central DMF network service." Johnson ¶665. Dr. Johnson's statements lack any real reasons why a POSITA would modify Bandaru's DMF specifically, and instead appears to assert that one *could* theoretically modify Bandaru's DMF

somehow to obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

1987. Dr. Johnson is quite clear in where he believes updates will come from: "Moreover, it would have been obvious to a POSITA that the operating system software update could be obtained from the same server system that relays image data and preferences to the frame device." Johnson ¶674. However, this is flawed. The only possible server in Bandaru that might be used is the DMF server which has a user profile database. As has been pointed out, adding any additional tasks to this server is very problematic: "DMF network service 1058 contains a user profile database, which may be physically located at DNS 1059. Server 1050, or server 1062." Bandaru at 12:1-3. Bandaru contemplates having the user profile database/DMF network service on a DNS server. Adding the storing and updating of software to the DNS server would substantially degrade network performance.

1988. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Bandaru with one of Nishiyama, Criss, and Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Bandaru.

1989. See also Section XIII.A.3 regarding claim 19 of the '573 Patent and claim 1 of the '930 Patent.

1990. For at least the reasons described in this section, Bandaru alone or in combination with Nishiyama, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

8. Claims 16 and 17 of the ’562 Patent are valid in view of Bandaru in combination with Hoyle, and one of Elgamal or RFC 2246, one of Nishiyama, Criss, or Kottapurath, and one of Criss, Kottapurath, or Kikinis

i. Claim [16.] The apparatus of claim 1 wherein said computer readable Claim instructions comprise instructions for causing said apparatus to transmit authentication information to said server system.

1991. Dr. Johnson refers back to his analysis of claim 2 of the ’573 Patent and claim 1 of the ’930 Patent, and again asserts that “Bandaru, in combination with Elgamal or RFC 2246, discloses an authentication function configured to authenticate said at least one server system.” Johnson ¶1067.

1992. As with claim 2 of the ’573 Patent, Dr. Johnson suggests a POSITA would combine Elgamal or TLS (RFC 2246) with Bandaru to achieve authentication. Johnson ¶¶735-742. Dr. Johnson merely states: “Although Bandaru discloses a client-server system that includes a first remote server system distributing image data to a client, Bandaru does not disclose the use of client-server security and authentication within that system” but that the concept of client-server authentication within such systems was well known . . . as shown by Elgamal and RFC 2246 (TLS 1.0).” Johnson ¶735.

1993. Though Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Bandaru. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶737-740, 1068-1069. Dr. Johnson then states: “Furthermore, a POSITA would have been motivated to combine Bandaru with the security and device authentication features, including the security handshaking and use of server certificates, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and to

authenticate the devices within Bandaru's client-server (e.g., DMF-DMF network service) image distribution system." Johnson ¶742.

1994. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[167] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[168] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

1995. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

1996. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

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[167] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[168] *Id.*

1997. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

1998. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

1999. Even as of today, no authentication is needed to retrieve an image from an internet server.

2000. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

2001. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2002. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2003. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

2004. See also Section XV.A.5-9 regarding the '573 Patent, claim 2.

2005. For at least the reasons described in this section, Bandaru alone or in combination with Elgamal or RFC 2246 does not anticipate or render obvious this claim limitation.

ii. Claim [17.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to receive authentication information from said server system.

2006. Dr. Johnson again simply refers back to his analysis of claim 2 of the ’573 Patent and claim 1 of the ’930 Patent, and again asserts that “Bandaru, in combination with Elgamal or RFC 2246, discloses an authentication function configured to authenticate said at least one server system.” Johnson ¶1067.

2007. As with claim 2 of the ’573 Patent, Dr. Johnson suggests a POSITA would combine Elgamal or TLS (RFC 2246) with Bandaru to achieve authentication. Johnson ¶¶735-742. Dr. Johnson merely states: “Although Bandaru discloses a client-server system that includes a first remote server system distributing image data to a client, Bandaru does not disclose the use of client-server security and authentication within that system” but that the concept of client-server authentication within such systems was well known . . . as shown by Elgamal and RFC 2246 (TLS 1.0).” Johnson ¶735.

2008. Though Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Bandaru. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶737-740, 1075-1076. Dr. Johnson then states: “Furthermore, a POSITA would have been motivated to combine Bandaru with the security and device authentication features, including the security handshaking and use of server certificates, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and to authenticate the devices within Bandaru’s client-server (e.g., DMF-DMF network service) image distribution system.” Johnson ¶742.

2009. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[169] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[170] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2010. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

2011. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

2012. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image

[169] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[170] *Id.*

color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

2013. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg
b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg
c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg
d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG
e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

2014. Even as of today, no authentication is needed to retrieve an image from an internet server.

2015. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

2016. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2017. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2018. Dr. Johnson does not address how Bandaru would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

2019. See also Section XV.A.5-9 regarding the '573 Patent, claim 2.

2020. For at least the reasons described in this section, Bandaru alone or in combination with Elgamal or RFC 2246 does not anticipate or render obvious this claim limitation.

B. Alleged Muoio Combinations

2021. I note again that Dr. Johnson's opening report addresses claims that are no longer being asserted. T

2022. herefore, when I list, below, the specific grounds and prior art combinations asserted in Dr. Johnson's opening report, I have removed reference to the unasserted claims.

2023. '573 Patent: Dr. Johnson asserts that "Muoio, in Combination with One or More of Jacklin, Stylistic Tablet, Elgamal, RFC 2246, Criss, Kottapurath, and Stahl, Invalidates the Asserted Claims of the '573 Patent." Johnson ¶1096. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the '573 Patent:

1. Claim 2 of the '573 Patent is invalid in view of Muoio in combination with:
   - one of Elgamal or RFC 2246, alone or further in combination with
   - one of Jacklin or Stylistic Tablet;
2. Claim 19 of the '573 Patent is invalid in view of Muoio in combination with:
   - one of Criss or Kottapurath, alone or further in combination with
   - one of Jacklin or Stylistic Tablet; and
3. Claim 6 of the '573 Patent is invalid in view of Muoio in combination with:
   - Stahl, alone or further in combination with
   - one of Jacklin or Stylistic Tablet.

Johnson ¶478.

2024. '930 Patent: Dr. Johnson asserts that "Muoio, in Combination with One or More of Jacklin, Stylistic Tablet, Elgamal, RFC 2246, Criss, Kottapurath, Nishiyama, and Hoyle, Invalidates the Asserted Claims of the '930 Patent." Johnson ¶1286. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the '930 Patent:

1. Claims 1-3, 7, and 8 of the '930 Patent are invalid in view of Muoio in combination with:

- one of Elgamal or RFC 2246, and
- one of Criss or Kottapurath, alone or further in combination with
- one of Jacklin or Stylistic Tablet, alone or further in combination with
- Nishiyama

2. Claims 4-6 and 15 of the ’930 Patent are invalid in view of Muoio in combination with:
   - Hoyle, and
   - one of Elgamal or RFC 2246, and
   - one of Criss or Kottapurath, alone or further in combination with
   - one of Jacklin or Stylistic Tablet, alone or further in combination with
   - Nishiyama.

Johnson ¶479.

2025. ’656 Patent: Dr. Johnson asserts that “Muoio, in Combination with One or More of Jacklin, Stylistic Tablet, Elgamal, RFC 2246, Criss, Kottapurath, and Kikinis, Invalidates the Asserted Claims of the ’656 Patent.” Johnson ¶1450. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’656 Patent:

1. Claims 1, 2, and 5-8 of the ’656 Patent are invalid in view of Muoio in combination with:
   - one of Elgamal or RFC 2246, and
   - one of Criss or Kottapurath, alone or further in combination with
   - one of Jacklin or Stylistic Tablet, alone or further in combination with
   - Kikinis.

Johnson ¶480.

2026. ’562 Patent: Dr. Johnson asserts that “Muoio, in Combination with One or More of Jacklin, Stylistic Tablet, Nishiyama, Elgamal, RFC 2246, Criss, Kottapurath, Kikinis, and Hoyle Invalidates the Asserted Claims of the ’562 Patent.” Johnson ¶1558. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’562 Patent:

1. Claims 1, 11, and 20 of the ’562 Patent are invalid in view of Muoio in combination with:
    - Hoyle, and
    - one of Nishiyama, Elgamal, or RFC 2246, and
    - one of Criss or Kottapurath, alone or further in combination with
    - one of Jacklin or Stylistic Tablet, alone or further in combination with
    - Kikinis;
2. Claim 4 of the ’562 Patent is invalid in view of Muoio in combination with:
    - Hoyle, and
    - Kikinis, and
    - one of Nishiyama, Elgamal, or RFC 2246, and
    - one of Criss or Kottapurath, alone or further in combination with
    - one of Jacklin or Stylistic Tablet; and
3. Claims 16 and 17 of the ’562 Patent are invalid in view of Muoio in combination with:
    - Hoyle, and
    - one of Elgamal or RFC 2246, and
    - one of Criss or Kottapurath, alone or further in combination with
    - one of Jacklin or Stylistic Tablet, alone or further in combination with

- Kikinis.

Johnson ¶481.

1. Claim 2 of the ’573 Patent is valid in view of Muoio in combination with one of Elgamal or RFC 2246, alone or further in combination with one of Jacklin or Stylistic Tablet

i. Claim [2.a] at least one frame device

2027. For this limitation in Claim 2, Dr. Johnson simply refers back to his analysis regarding claim element [1a] of Claim 1. Johnson ¶1154. In reference to that claim limitation, Dr. Johnson claims the display device 100 and the art space controller of Muoio meets what he alleges to be a definition of a frame device in the ’573 Patent at 6:35-39. Johnson ¶¶1101-1102. That section of the ’573 Patent states: “The present invention comprises one or more interconnected frame devices. A frame device is a self-configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric (e.g., a computer network).” ’573 Patent at 6:34-39.

2028. Specifically, Dr. Johnson asserts:

> The display device and associated art space controller is connected to an art server via a communications channel such as the Internet. *Id.* at 2:11-39, 6:6-29. Muoio’s art distribution system maintains a database of images, and a user may specify that a playlist of images is displayed on certain ones of the display devices. *Id.* at 3:36-61. The art server transmits the images for display on the display devices according to the playlists. *Id.* at 7:6-13; *see id.* at 2:11-26 (“An art distribution system for distributing art to multiple display devices within an environment is provided. . . . The art distribution system allows a user to select a space within the hierarchy and then to select an image that is to be displayed at the display devices within the selected space.”), 2:52-59, 3:44-57 (“Each space within the hierarchy may have one or more display devices within it. For example, the master bedroom may have several display devices that are capable of displaying art images.”), 6:20-23 (“The art server communicates via communications channel 608 (e.g., the Internet) to an art mass storage device. The art mass storage device includes images and image information for accessible images.”); 7:28-38 (discussing “retrieving the images from the art server and displaying the images on the associated display devices”).

Johnson ¶1102.

2029. First, as shown above, Dr. Johnson asserts the display device is connected to the art server over the Internet. Muoio does not disclose or suggest this. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
    - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).
    - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.
- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the

function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).

- This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2030. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

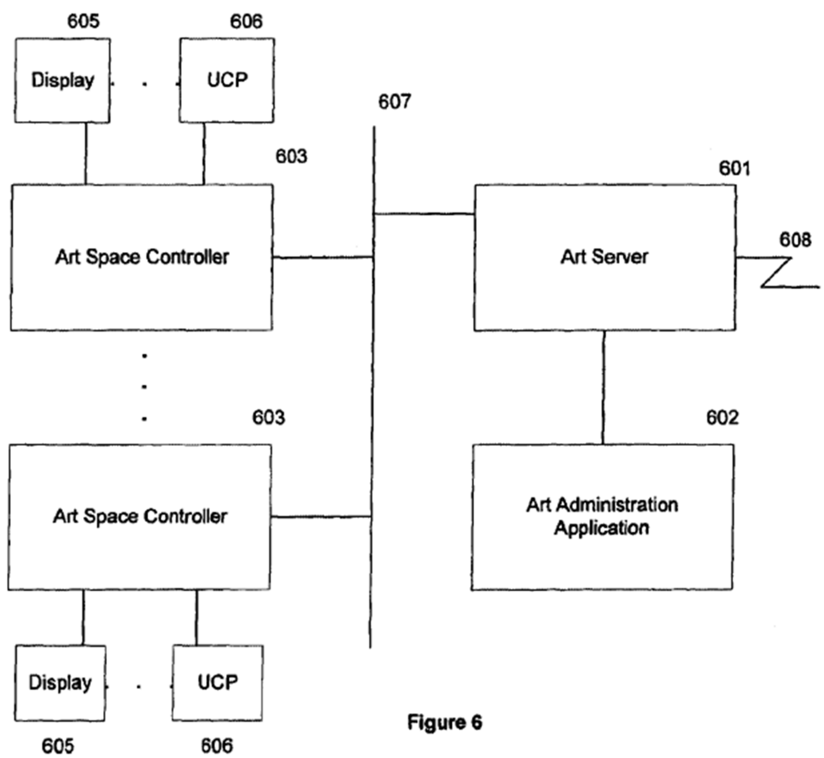


Figure 6

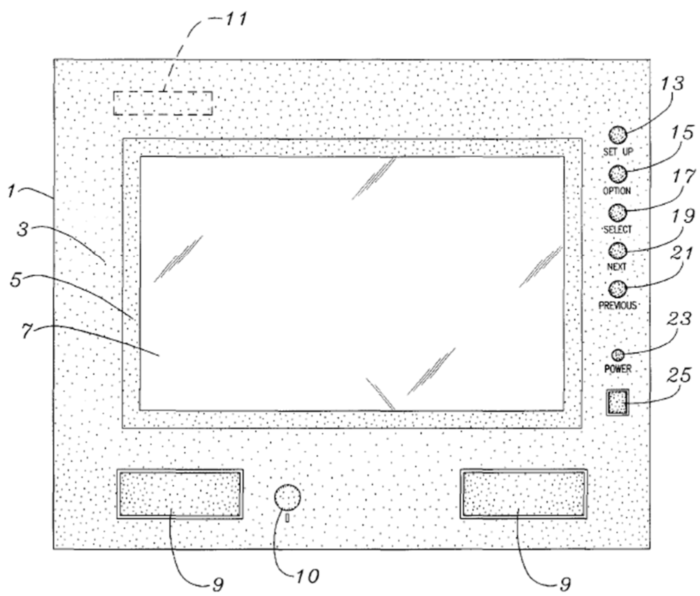
2031. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2032. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error.

2033. Additionally, the display device 605 and the art space controller 603 are not a part of the same device, and the display device 605 is not "self-configuring." The display devices are essentially monitor or television devices that have content displayed on them as via the art space controllers 603 and the user control points 606. Muoio at 6:27-29.

2034. Apparently recognizing Muoio's deficiencies, Dr. Johnson states: "[t]o the extent Muoio does not expressly disclose a frame device in the combination of an art space controller and digital display device, it would have been obvious to a POSITA, as of the earliest filing date of the '573 Patent, that the art space controller and associated digital display device could be implemented in a single computer system, such as the digital picture frame of Jacklin or the Stylistic Tablet." Johnson ¶1103. As I explained in Section XII.B. Jacklin is a digital picture frame, shown for example below:

Fig. 1



2035. As I explained in Section XIII.c, Stylistic Tablet is a tablet computer device, shown for example below.

2036. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> A POSITA, as of the earliest filing date for the '573 Patent, would have been motivated to combine Jacklin's digital picture frame or Stylistic Tablet with

> Muoio's client-server system to provide a digital art display frame. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device containing the art display that displays the images distributed by Muoio's art distribution system, and its associated art space controller. A POSITA would have been motivated to make this combination based on the teachings of Jacklin and/or Stylistic Tablet of a frame device containing a display and a controller for controlling the display of images on the display. *See, e.g.*, Jacklin at 4:10-23 ("electronic apparatus for displaying images" includes a CPU and "means of . . . displaying each of said plurality of bits of video and audio data"), FIG. 1; Stylistic 1000 RF Overview ("The Stylistic 1000 RF is powered by a 100 megahertz (MHz) 486 processor" and includes an "8-inch LCD[]"). The combination would have involved combining prior art elements according to known methods to yield predictable results, e.g., combining Muoio's art space controller and digital display device into a frame device in the same manner in which Jacklin and/or Stylistic Tablet each teach a frame device having a controller and display.

Johnson ¶1106.

2037. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2038. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2039. In fact, a POSITA would understand that the nature of the Stylistic Tablet makes it entirely unsuitable for Muoio's purpose. The same is true for Jacklin. As shown in Figure 6 of

Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead, Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2040. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2041. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references

to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2042. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ii. Claim [2.b] configured to operate according to preferences comprising an image display list defined by a user,

2043. Dr. Johnson again cites portions of Muoio that discuss play lists and that users can modify play lists using the user control point, and alleges that this means the display devices 605 are configured to operate according to preferences comprising an image display list defined by a user. Johnson ¶¶1108-1111, 1155-1157.

2044. However, as I described above, it is the art space controller 603 of Muoio that receives images from the local art server 601 and handles play lists, not the display device. The display devices 605 of Muoio are "dumb" devices akin to a traditional large computer monitor or television screen that merely receive images for display from an outside source, in this case the art space controller 603. Therefore, the display devices 605 in Muoio are not configured to operate according to preferences comprising an image display list defined by a user.

2045. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iii. a user interface . . . [2.f] configured to obtain image data and said preferences from said user [2.g] and provide said image data and said preferences to said at least one server system

2046. This element of claim 2, in its entirety, recites "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system."

2047. Dr. Johnson, for these elements, refers back to his analysis regarding Claim 1 of the '573 Patent. Johnson ¶¶1160-1163. Dr. Johnson asserts that the "user interface at a user control point device" is the claimed user interface. Johnson ¶¶1120-1130.

2048. First, it is again emphasized that Dr. Johnson has mischaracterized Muoio's disclosure of communicating with a mass storage device over the Internet and its disclosure of the art server being local to the display devices and display controllers. Muoio discloses two communication channels 607 and 608. Communication channel 607 is a local communications channel "on the same computer system," Muoio at 6:17-20, where the art space controllers control Muoio's display devices 605 and user control point devices 606. The art server stores images to be displayed by the display devices locally, as evidenced by Muoio's disclosure that the purpose of Muoio's system is to provide a local system within a user's home. *See* Muoio at 3:54-61.

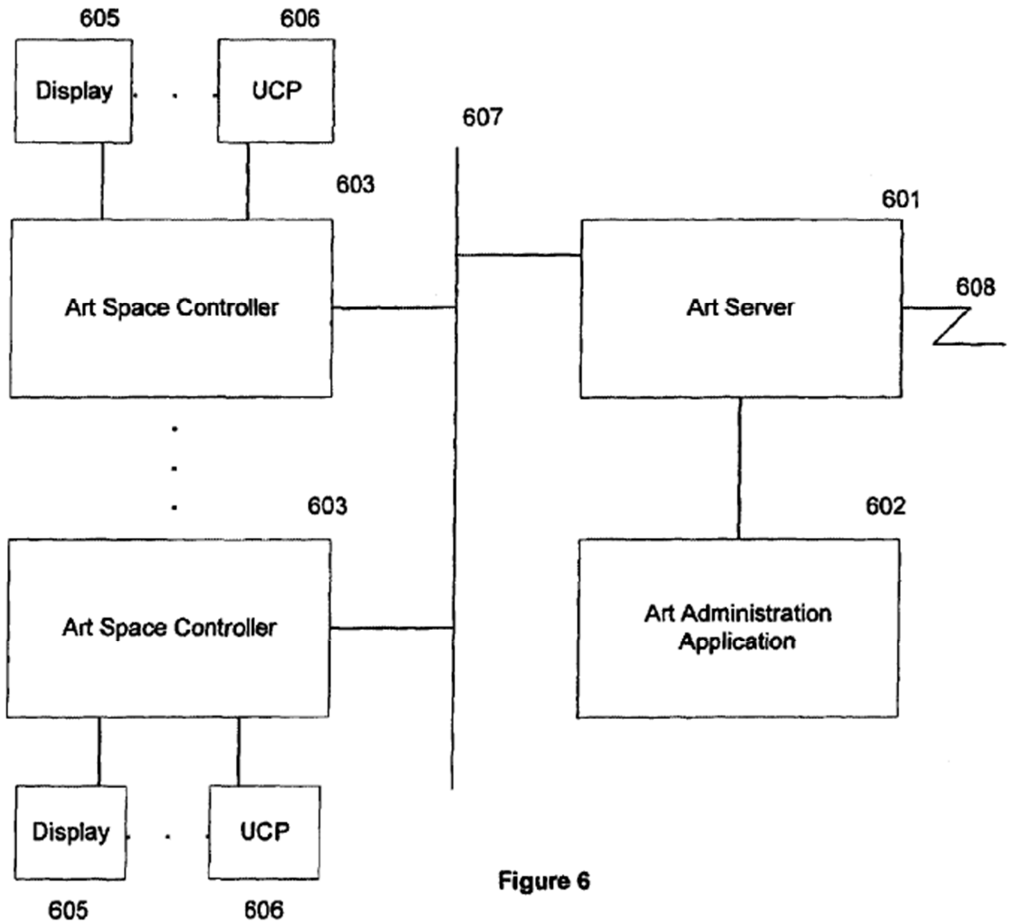


Figure 6

2049. Communications channel 608 is used by the art server to communicate with a remote mass storage device to transmit queries for art. Muoio at 6:17-23, 8:54-65. Even if, *arguendo*, one were to interpret the local communications channel 607 as providing the claimed "network," a specific problem identified in the Patents-in-Suit is that "a person who does not have physical access to the device cannot introduce new images into the device. Moreover, the device cannot be controlled from a remote location. For example, making changes to a website cannot control the behavior of the control mechanism." '573 Patent at 2:17-23. In Muoio, for a user to personally provide image data to be stored on the art server, the user must be physically present at the location of the art distribution system, and Muoio discloses that the art administration

application 602 of the art server 601 receives new images from an art input device 807 such as a scanner. Muoio at 8:7-28. Muoio explicitly states that:

> FIG. 8 is a block diagram illustrating components of the art administration application in one embodiment. The art administration application includes an art administration controller 801, an art server interface 802, a manage play list component 803, an assign play list component 804, and a submit query component 805. The art administration application interfaces with 1/0 devices 806, such as a keyboard and display, and interfaces with an art input device, such as an image scanner. Muoio at 7:13-22.

2050. As shown in FIGS. 6 and 8 below, the art administration application is part of the art server, located in a different area of the environment from the art space controllers and the display devices:

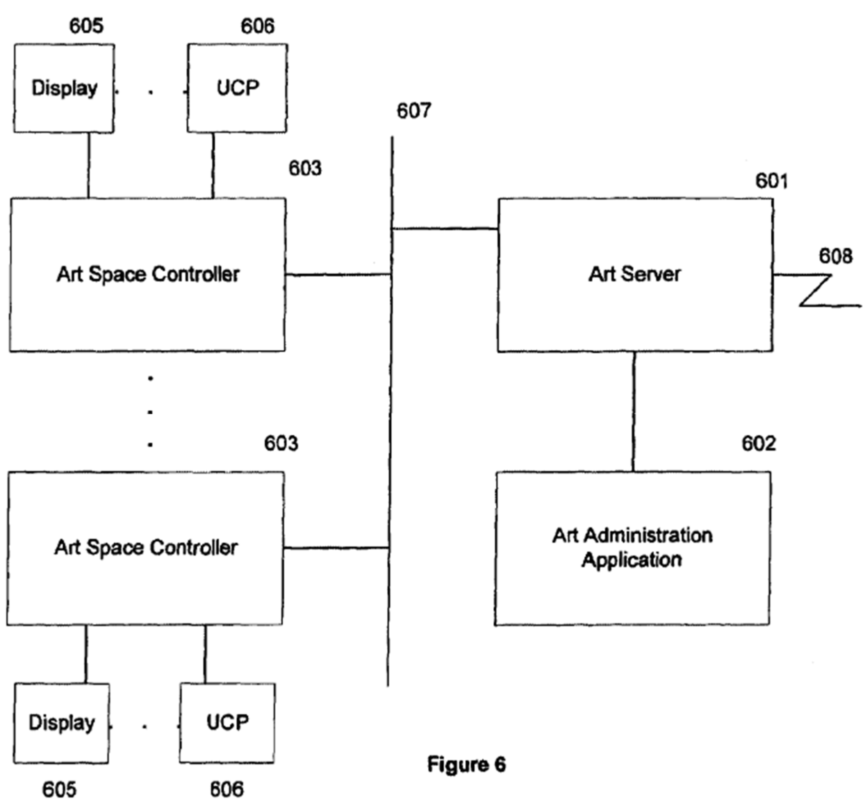


Figure 6

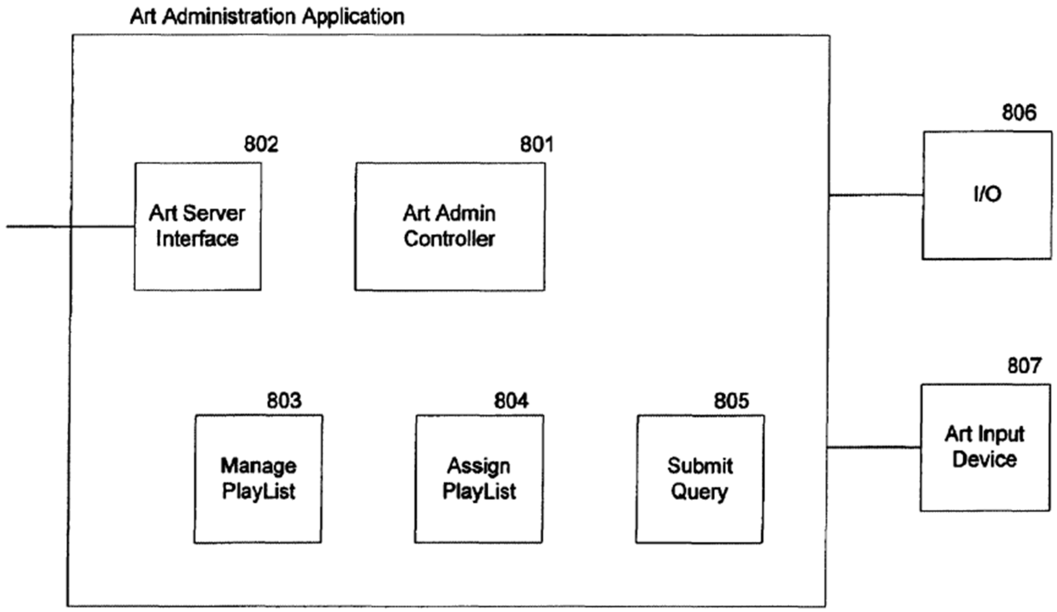


Figure 8

2051. The claims require that the user interface is "configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system." '573 Patent, Claim 1. Muoio's user interface relied on in the claim charts is provided by the user control point device 606, Muoio at 4:55-57, and is shown in FIGS. 2-5 below:

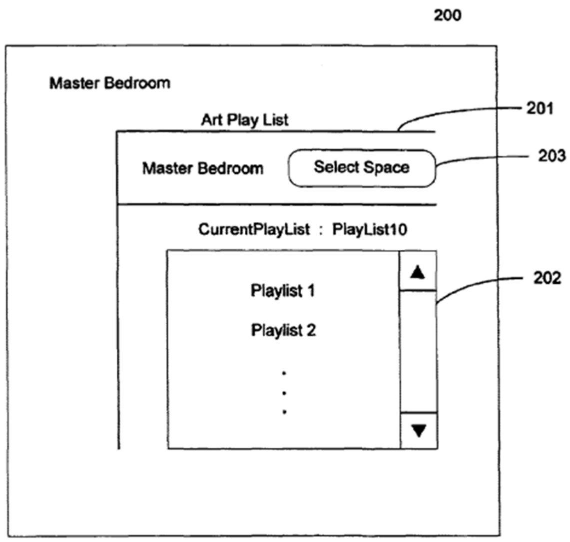


Figure 2

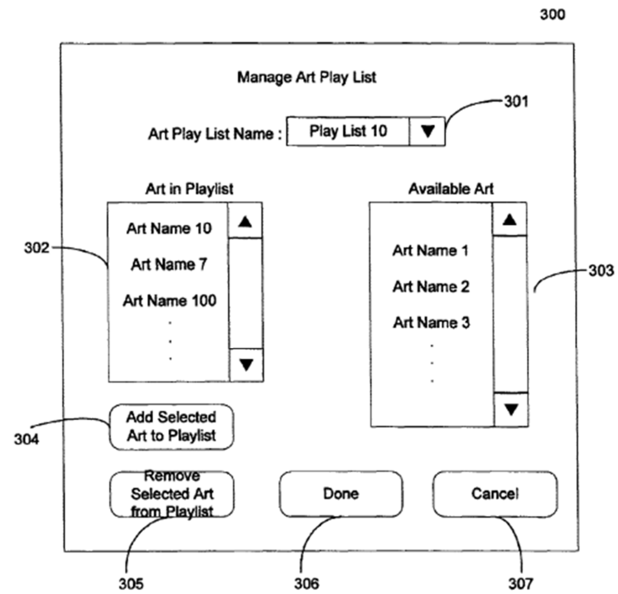


Figure 3

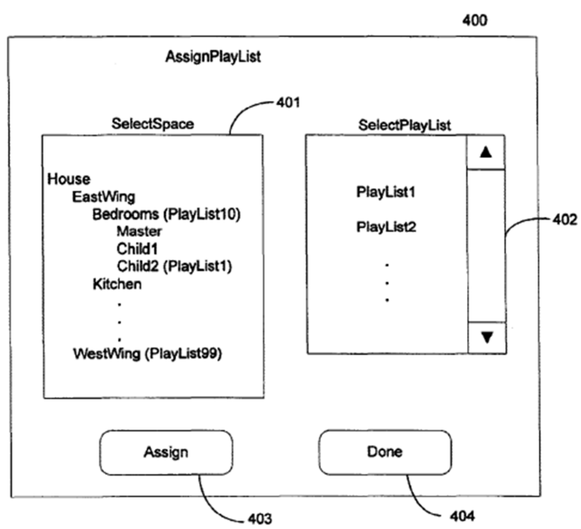


Figure 4

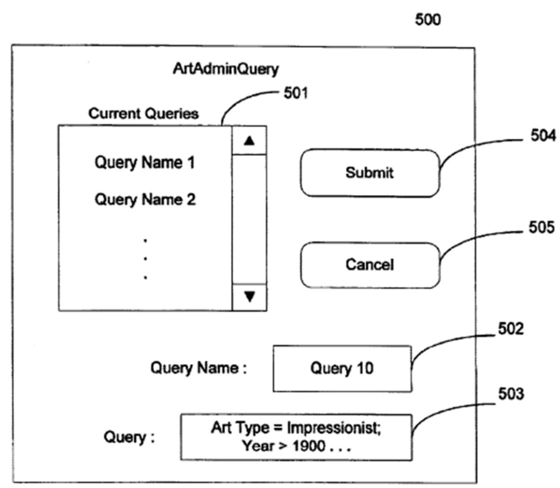


Figure 5

2052. As shown above, the user interface allows a user to configure playlists at the user control point device 606, but the figures do not illustrate any elements relating to providing images by the user. Again, the only disclosure of providing images by a user is related to a user scanning in images via an art administration application at the art server, and there is no specific reference to a "user interface" in this disclosure, but just that a server controller receives the images and

provides them to a database at the art server for storage. Muoio at 8:19-24. As I have pointed out, Muoio describes its purpose as allowing for users to select artwork for display at various art space controller-UCP-display device setups distributed throughout a building. Muoio at 1:65-67; 3:35-65. In light of this purpose, it is only logical that the system would not include scanners at the various art space controller-UCP-display device setups, as suggested by Dr. Johnson's mischaracterization of Muoio's system, but, rather, as described in Muoio, image input devices like a scanner would be situated near the art server.

2053. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iv. Claim [2.i] wherein said at least one server system is configured to generate package data comprising said image data and said preferences [2.j] and to periodically relay said package data comprising said image data and said preferences to said at least one frame device [2.k] when and in response to said at least one frame device automatically initiating communication with said server system and [2.l] said at least one frame device issuing a request for a current one of said package data comprising said image data and said preferences

2054. Dr. Johnson asserts that Muoio discloses these elements, emphasizing that the Court construed package data as a "compilation of data that provides the recipient and the transmitting device with information needed to complete a transaction," and asserting that the description in Muoio such as at 9:47-10:3, shows generating package data and periodically relaying package data in response to automatic requests. Johnson ¶¶1145-1152, 1165-1183. This is incorrect.

2055. Muoio does not disclose or suggest periodically relaying package data that includes image data and preferences to display devices in response to display devices automatically initiating communications with a server and issuing a request for the package data. In Muoio, a portion relied upon by Dr. Johnson states:

> FIG. 17 is a flow diagram of the processing of an art display module. The art display module overlaps the displaying of an image with retrieving from the art server of the next image to be displayed. The module continually displays the images in the play list by displaying the first image in the play list after the last image is displayed. The art display module is provided with a display list. In step 1701, the module selects the first image in the display list. In step 1702, the module retrieves the selected image from the art server. In steps 1703-1707, the module loops displaying the images in the play list at the specified intervals. In step 1703, the module displays the last retrieved image. In step 1704, the module selects the next image in the display list. In step 1705, the module retrieves the selected image from the art server. In step 1705, the modules pauses for the requisite interval or until a user touches the panel. In step 1706, if the user touches the panel, then the module continues at step 1707, else the module loops to step 1703 to select and display the last retrieve image. In step 1707, the function displays the information relating to the current image and then loops to step 1705 to pause. The display of the information corresponds to FIG. 1. In one embodiment, the module may cache the images so that each image of a play list only needs to be retrieved once.

Muoio at 9:47-10:3.

2056. First, as shown above, it is Muoio's art space controllers that performs this process, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2057. Also, the art server *pushes* play lists to art space controllers independent of any request:

> In step 1802, the module displays the user interface for the user control point device. In step 1803, if the user indicated to assign a new play list the space, then the module continues at step 1804, else the module returns. In step 1804, the module notifies the *art server* to change the play list assignment for the space. **The *art server* then sends out an event to notify the art space controllers that the play list has changed.**

Muoio at 10:7-14 (emphasis added).

2058. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller, as required in the claims. Muoio at 9:52-53.

2059. Since Muoio only discloses separate art space controllers and a local art server that pushes play lists to the art space controllers, Muoio does not disclose a display device that automatically initiates communications and issues a request for both image data and preferences ("package data") nor a server system that periodically relays image data and preferences in response to a request.

2060. Further confusing Dr. Johnson's positions, Dr. Johnson cites to portions of Muoio that refer to a user being able to set up "queries" that allow the *art server* to download art from the remote mass storage device based on the query, such as a query for art by a particular artist. Johnson ¶¶1148-1149; *see* Muoio, 4:27-41, 5:51-6:5, 8:54-9:25. For instance, see FIG. 5 showing an example query:

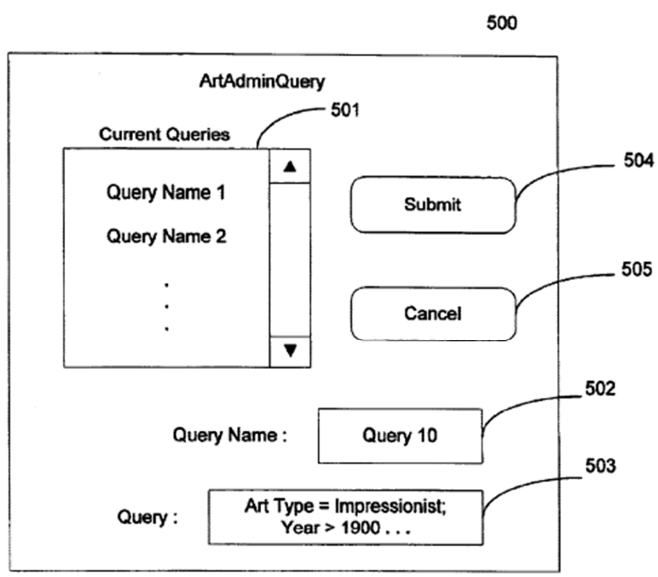


Figure 5

2061. However, these queries are not performed by a display device as required by the claim. Additionally, the Ceiva claims and specification clearly show that requesting images is entirely initiated by the display apparatus to avoid a user having to, e.g., "know how to navigate around the operating system and how to use the program utilized to obtain the data." *See, e.g.*, '573 Patent at 3:32-37. In Muoio, queries require a user to know how to navigate and define queries using syntax average users would not be familiar with, such as "SQL." Muoio at 5:59-65. As such, a POSITA would not have looked to Muoio to solve the problems the Patents-in-Suit sought to address.

2062. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

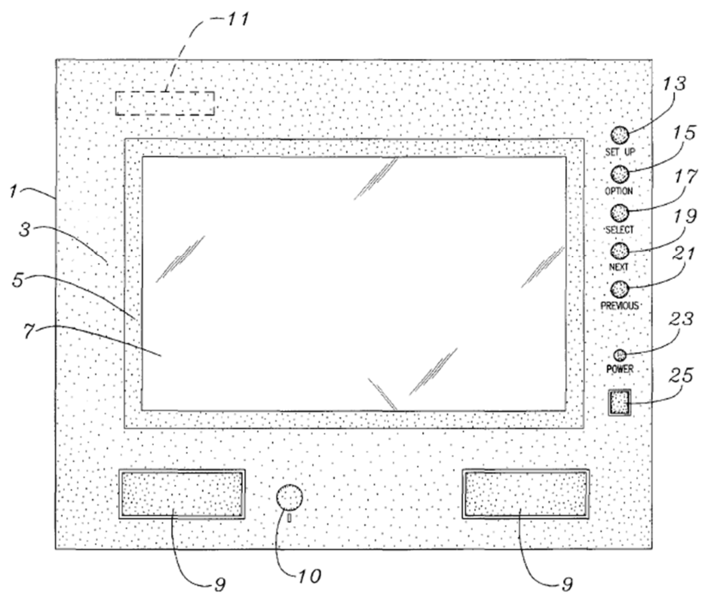
v. Claim [2.m] wherein said at least one frame device is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in memory of said frame device.

2063. Dr. Johnson first restates his position that Muoio discloses that package data is received and stored in memory of a display device, and, in the alternative, that it would be obvious to combine Muoio with one of Jacklin or Stylistic Tablet to provide this functionality. Johnson ¶¶1184-1187. But as I explained above in Section XIII.b, Muoio does not disclose providing image data *and* preferences to display devices. Also, as I explained in Section XIII.b, a POSITA would not be motivated to combine Jacklin or Stylistic Tablet with Muoio, and Dr. Johnson has also not provided any reasons a POSITA would do so.

2064. As I explained, apparently recognizing Muoio's deficiencies, Dr. Johnson states: "[t]o the extent Muoio does not expressly disclose a frame device in the combination of an art space controller and digital display device, it would have been obvious to a POSITA, as of the earliest filing date of the '573 Patent, that the art space controller and associated digital display

device could be implemented in a single computer system, such as the digital picture frame of Jacklin or the Stylistic Tablet." Johnson ¶1103. As I explained in Section XIII.B Jacklin is a digital picture frame, shown for example below:

Fig. 1



2065. As I explained in Section XIII.c, Stylistic Tablet is a tablet computer device, shown for example below.

2066. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> A POSITA, as of the earliest filing date for the '573 Patent, would have been motivated to combine Jacklin's digital picture frame or Stylistic Tablet with Muoio's client-server system to provide a digital art display frame. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device containing the art display that displays the images distributed by Muoio's art distribution system, and its associated art space controller. A POSITA would have been motivated to make this combination based on the teachings of Jacklin and/or Stylistic Tablet of a frame device containing a display and a controller for controlling the display of images on the display. *See, e.g.*, Jacklin at 4:10-23 ("electronic apparatus for displaying images" includes a CPU and "means of . . . displaying each of said plurality of bits of video and audio data"), FIG. 1; Stylistic 1000 RF Overview ("The Stylistic 1000 RF is powered by a 100 megahertz (MHz) 486 processor" and includes an "8-inch LCD[]"). The combination would have involved combining prior art elements according to known methods to yield predictable results, e.g., combining Muoio's art space controller and digital display device into a frame device in the same manner in which Jacklin and/or Stylistic Tablet each teach a frame device having a controller and display.

Johnson ¶1106.

2067. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2068. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a

smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2069. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead, Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2070. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2071. Dr. Johnson also admits that Muoio does not disclose authentication, but asserts that, because Muoio discloses the art space controllers and the art server, it "would have been obvious to modify Muoio to perform client-server authentication," based on Elgamal's or RFC 2246's disclosures, "e.g., authenticating the server system before storing package data comprising image data and preferences in memory of the frame device." Johnson ¶¶1188-1195. Dr. Johnson asserts a POSITA would be motivated to implement authentication between the art space controllers and the art server because "[a] POSITA . . . would have been motivated to combine Muoio with the security and device authentication features disclosed in Elgamal and/or RFC 2246 to ensure data security and integrity and authenticate the devices within Muoio's client-server (art controller and associated display device—art server system) image distribution system before any data is transferred between them." Johnson ¶¶1188-1195.

2072. But, as I explained in Section XIII.a, the art server and the art space controllers are within a local network, i.e., a local network in the same building, and do not communicate over the Internet. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
    - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.

- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).

    - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.

- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).

    - This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2073. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

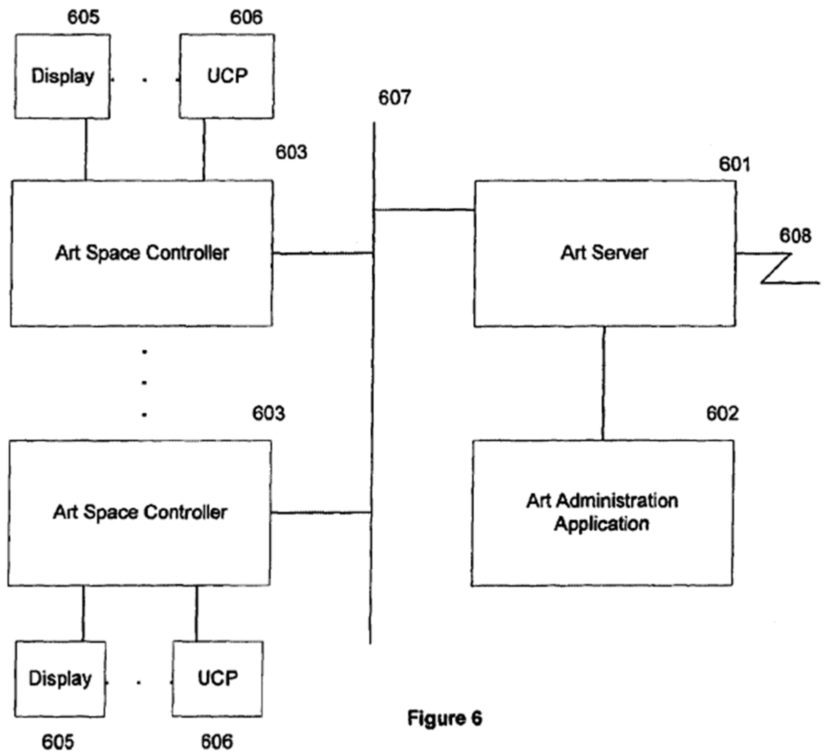


Figure 6

2074. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2075. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error. Dr. Johnson also asserts that a POSITA would be motivated to combine Muoio and Elgamal or RFC 2246 so that, in communications between Muoio's art space controllers and art server, communications are "prevent[ed] from being intercepted, altered, or otherwise compromised." Johnson ¶¶1197-1202.

2076. This is illogical. Elgamal and RFC 2246 emphasize they are directed to communications between entities over the public Internet. Elgamal at 1:63-2:22; RFC 2246 at 1.

While some local networks could benefit from certain security protocols, Muoio's system is a fairly simple local system that has a small art space controller device pull images stored on a larger art server computer that acts as a storage device in a real-time manner (that is, as the art space controller reaches each image in a play list). Muoio at 9:47-10:3. A POSITA would see little need to implement security measures such as encryption and authentication between the art space controllers and the local art server.

2077. Although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Muoio. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶1189-1194. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[171] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[172] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

[171] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[172] *Id.*

2078. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2079. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2080. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2081. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using*

Windows 98, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2082. Dr. Johnson states: "The combination of Elgamal with Muoio is a combination of prior art elements according to known methods to yield predictable result." Johnson ¶1200. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Second, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2083. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2084. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

2. Claims 1 and 6 of the '573 Patent are valid in view of Muoio in combination with Stahl, alone or further in combination with one of Jacklin or Stylistic Tablet

2085. I note that Claim 6 includes all the elements of Claim 1 of the '573 Patent, and therefore I address the elements of Claim 1 below as well.

i. Claim [1.a] at least one frame device

2086. In reference to that claim limitation, Dr. Johnson claims the display device 100 and the art space controller of Muoio meets what he alleges to be a definition of a frame device in the '573 Patent at 6:35-39. Johnson ¶¶1101-1102. That section of the '573 Patent states: "The present invention comprises one or more interconnected frame devices. A frame device is a self-configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric (e.g., a computer network)." '573 Patent at 6:34-39.

2087. Specifically, Dr. Johnson asserts:

> The display device and associated art space controller is connected to an art server via a communications channel such as the Internet. *Id.* at 2:11-39, 6:6-29. Muoio's art distribution system maintains a database of images, and a user may specify that a playlist of images is displayed on certain ones of the display devices. *Id.* at 3:36-61. The art server transmits the images for display on the display devices according to the playlists. *Id.* at 7:6-13; *see id.* at 2:11-26 ("An art distribution system for distributing art to multiple display devices within an environment is provided. . . . The art distribution system allows a user to select a space within the hierarchy and then to select an image that is to be displayed at the display devices within the selected space."), 2:52-59, 3:44-57 ("Each space within the hierarchy may have one or more display devices within it. For example, the master bedroom may have several display devices that are capable of displaying art images."), 6:20-23 ("The art server communicates via communications channel 608 (e.g., the Internet) to an art mass storage device. The art mass storage device includes images and image information for accessible images."); 7:28-38 (discussing "retrieving the images from the art server and displaying the images on the associated display devices").

Johnson ¶1102.

2088. First, as shown above, Dr. Johnson asserts the display device is connected to the art server over the Internet. Muoio does not disclose or suggest this. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to

the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
    - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).
    - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.
- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).

- This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2089. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

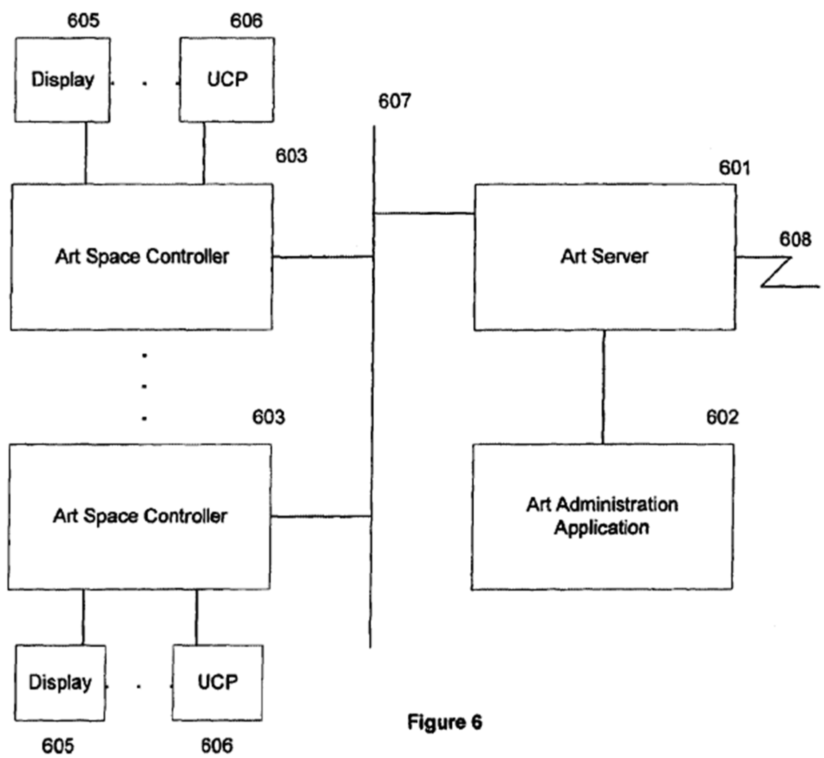


Figure 6

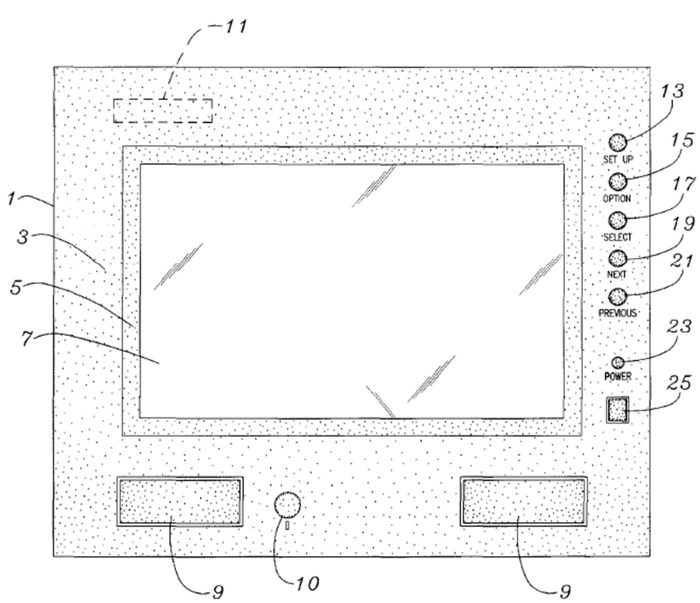
2090. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2091. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error.

2092. Additionally, the display device 605 and the art space controller 603 are not a part of the same device, and the display device 605 is not "self-configuring." The display devices are essentially monitor or television devices that have content displayed on them as via the art space controllers 603 and the user control points 606. Muoio at 6:27-29.

2093. Apparently recognizing Muoio's deficiencies, Dr. Johnson states: "[t]o the extent Muoio does not expressly disclose a frame device in the combination of an art space controller and digital display device, it would have been obvious to a POSITA, as of the earliest filing date of the '573 Patent, that the art space controller and associated digital display device could be implemented in a single computer system, such as the digital picture frame of Jacklin or the Stylistic Tablet." Johnson ¶1103. Jacklin is a digital picture frame, shown for example below:

Fig. 1



2094. As I explained in Section XIII.b, Stylistic Tablet is a tablet computer device, shown for example below.

2095. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> A POSITA, as of the earliest filing date for the '573 Patent, would have been motivated to combine Jacklin's digital picture frame or Stylistic Tablet with Muoio's client-server system to provide a digital art display frame. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device containing the art display that displays the images distributed by Muoio's art distribution system, and its associated art space controller. A POSITA would have been motivated to make this combination based on the teachings of Jacklin and/or Stylistic Tablet of a frame device containing a display and a controller for controlling the display of images on the display. *See, e.g.*, Jacklin at 4:10-23 ("electronic apparatus for displaying images" includes a CPU and "means of . . . displaying each of said plurality of bits of video and audio data"), FIG. 1; Stylistic 1000 RF Overview ("The Stylistic 1000 RF is powered by a 100 megahertz (MHz) 486 processor" and includes an "8-inch LCD[]"). The combination would have involved combining prior art elements according to known methods to yield predictable results, e.g., combining Muoio's art space controller and digital display device into a frame device in the same manner in which Jacklin and/or Stylistic Tablet each teach a frame device having a controller and display.

Johnson ¶1106.

2096. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2097. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2098. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead, Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point

devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2099. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2100. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2101. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ii. Claim [1.b] configured to operate according to preferences defined by a user

2102. Dr. Johnson again cites portions of Muoio that discuss play lists and that users can modify play lists using the user control point, and alleges that this means the display devices 605 are configured to operate according to preferences comprising an image display list defined by a user. Johnson ¶¶1108-1111.

2103. However, as I described above, it is the art space controller 603 of Muoio that receives images from the local art server 601 and handles play lists, not the display device. The display devices 605 of Muoio are "dumb" devices akin to a traditional large computer monitor or television screen that merely receive images for display from an outside source, in this case the art space controller 603. Therefore, the display devices 605 in Muoio are not configured to operate according to preferences comprising an image display list defined by a user.

2104. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iii. a user interface . . . [1.f] configured to obtain image data and said preferences from said user [1.g] and provide said image data and said preferences to said at least one server system

2105. This element of claim 1, in its entirety, recites "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system."

2106. Dr. Johnson asserts that the "user interface at a user control point device" is the claimed user interface. Johnson ¶¶1120-1130.

2107. First, it is again emphasized that Dr. Johnson has mischaracterized Muoio's disclosure of communicating with a mass storage device over the Internet and its disclosure of the

art server being local to the display devices and display controllers. Muoio discloses two communication channels 607 and 608. Communication channel 607 is a local communications channel "on the same computer system," Muoio at 6:17-20, where the art space controllers control Muoio's display devices 605 and user control point devices 606. The art server stores images to be displayed by the display devices locally, as evidenced by Muoio's disclosure that the purpose of Muoio's system is to provide a local system within a user's home. *See* Muoio at 3:54-61.

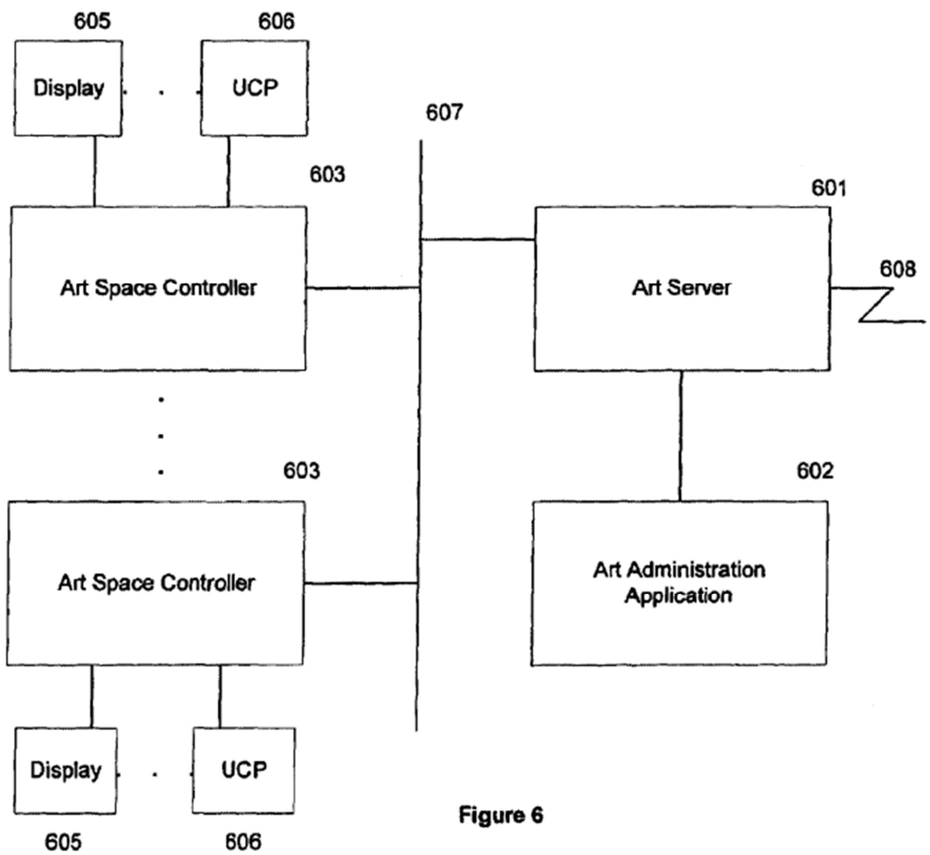


Figure 6

2108. Communications channel 608 is used by the art server to communicate with a remote mass storage device to transmit queries for art. Muoio at 6:17-23, 8:54-65. Even if, *arguendo*, one were to interpret the local communications channel 607 as providing the claimed "network," a specific problem identified in the Patents-in-Suit is that "a person who does not have

physical access to the device cannot introduce new images into the device. Moreover, the device cannot be controlled from a remote location. For example, making changes to a website cannot control the behavior of the control mechanism." '573 Patent at 2:17-23. In Muoio, for a user to personally provide image data to be stored on the art server, the user must be physically present at the location of the art distribution system, and Muoio discloses that the art administration application 602 of the art server 601 receives new images from an art input device 807 such as a scanner. Muoio at 8:7-28. Muoio explicitly states that:

> FIG. 8 is a block diagram illustrating components of the art administration application in one embodiment. The art administration application includes an art administration controller 801, an art server interface 802, a manage play list component 803, an assign play list component 804, and a submit query component 805. The art administration application interfaces with 1/0 devices 806, such as a keyboard and display, and interfaces with an art input device, such as an image scanner.

Muoio at 7:13-22.

2109. As shown in FIGS. 6 and 8 below, the art administration application is part of the art server, located in a different area of the environment from the art space controllers and the display devices:

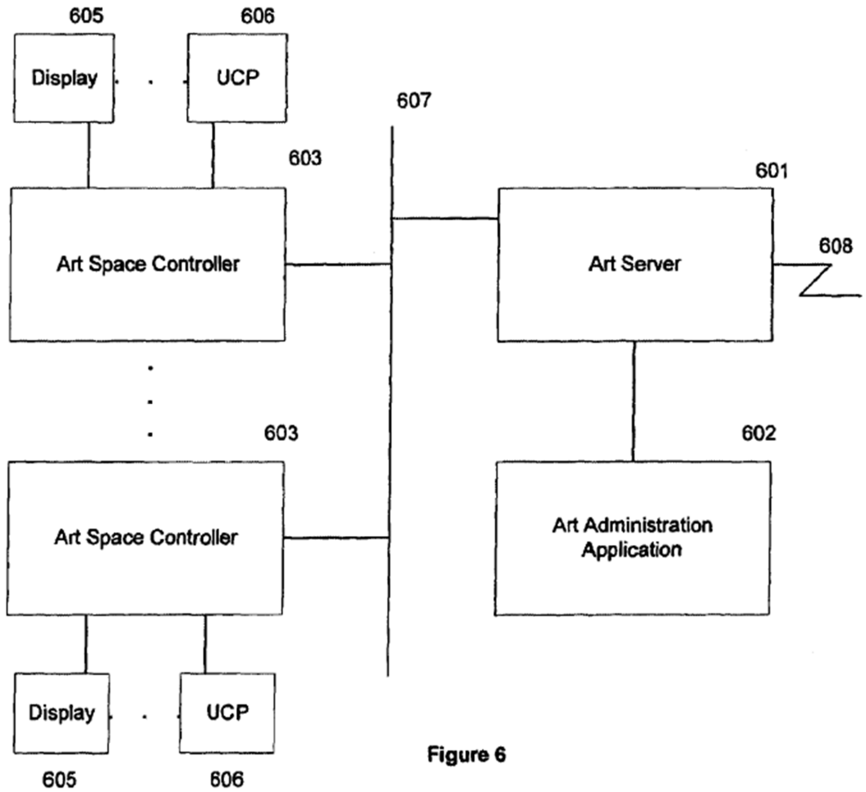


Figure 6

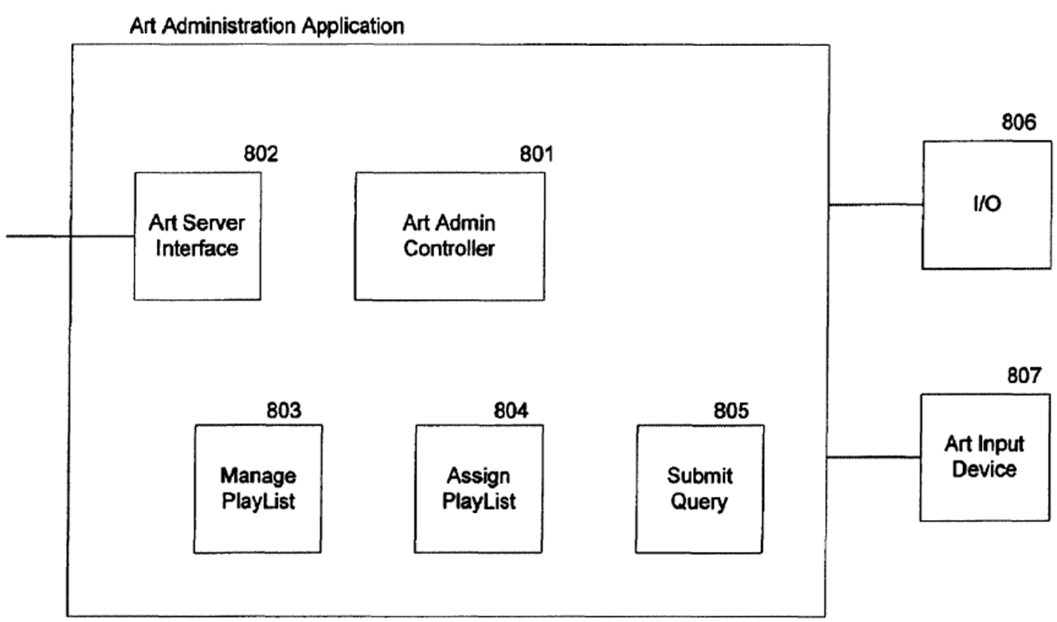


Figure 8

2110. The claims require that the user interface is "configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system." '573 Patent, Claim 1. Muoio's user interface relied on in the claim charts is provided by the user control point device 606, Muoio at 4:55-57, and is shown in FIGS. 2-5 below:

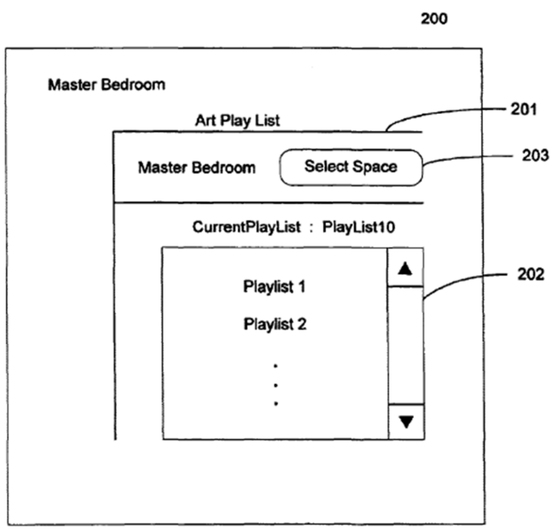


Figure 2

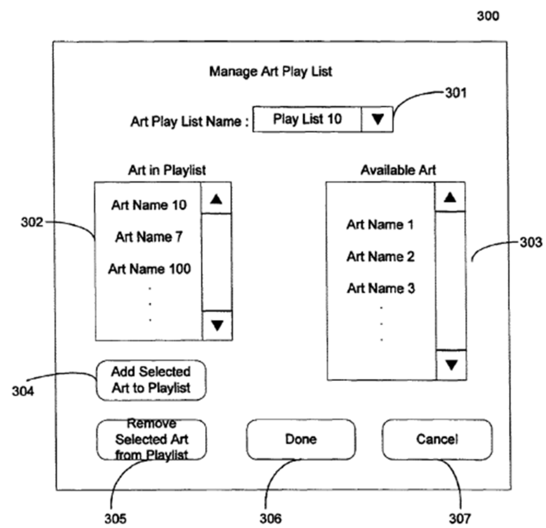


Figure 3

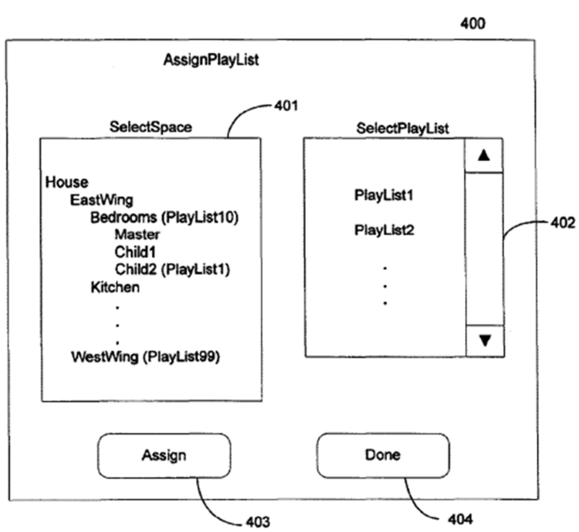


Figure 4

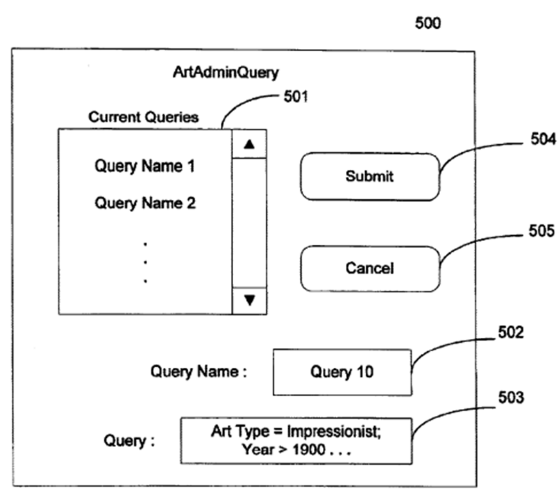


Figure 5

2111. As shown above, the user interface allows a user to configure playlists at the user control point device 606, but the figures do not illustrate any elements relating to providing images by the user. Again, the only disclosure of providing images by a user is related to a user scanning in images via an art administration application at the art server, and there is no specific reference to a "user interface" in this disclosure, but just that a server controller receives the images and provides them to a database at the art server for storage. Muoio at 8:19-24. As I have pointed out, Muoio describes its purpose as allowing for users to select artwork for display at various art space controller-UCP-display device setups distributed throughout a building. Muoio at 1:65-67; 3:35-65. In light of this purpose, it is only logical that the system would not include scanners at the various art space controller-UCP-display device setups, as suggested by Dr. Johnson's mischaracterization of Muoio's system, but, rather, as described in Muoio, image input devices like a scanner would be situated near the art server.

2112. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iv. Claim [1.i] wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data.

2113. Dr. Johnson asserts that Muoio discloses these elements, asserting that the description in Muoio, such as at 9:47-10:3, shows relaying image data and preferences in response to an automatic request, and that this occurs periodically. Johnson ¶¶1145-1152. This is incorrect.

2114. Muoio does not disclose or suggest relaying image data and preferences to display devices in response to display devices automatically initiating communications with a server and issuing a request for image data. In Muoio, a portion relied upon by Dr. Johnson states:

> FIG. 17 is a flow diagram of the processing of an art display module. The art display module overlaps the displaying of an image with retrieving from the art server of the next image to be displayed. The module continually displays the images in the play list by displaying the first image in the play list after the last image is displayed. The art display module is provided with a display list. In step 1701, the module selects the first image in the display list. In step 1702, the module retrieves the selected image from the art server. In steps 1703-1707, the module loops displaying the images in the play list at the specified intervals. In step 1703, the module displays the last retrieved image. In step 1704, the module selects the next image in the display list. In step 1705, the module retrieves the selected image from the art server. In step 1705, the modules pauses for the requisite interval or until a user touches the panel. In step 1706, if the user touches the panel, then the module continues at step 1707, else the module loops to step 1703 to select and display the last retrieve image. In step 1707, the function displays the information relating to the current image and then loops to step 1705 to pause. The display of the information corresponds to FIG. 1. In one embodiment, the module may cache the images so that each image of a play list only needs to be retrieved once.

Muoio at 9:47-10:3.

2115. First, as shown above, it is Muoio's art space controllers that performs this process, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2116. Also, the art server *pushes* play lists to art space controllers independent of any request:

> In step 1802, the module displays the user interface for the user control point device. In step 1803, if the user indicated to assign a new play list the space, then the module continues at step 1804, else the module returns. In step 1804, the module notifies the *art server* to change the play list assignment for the space. **The *art server* then sends out an event to notify the art space controllers that the play list has changed.**

Muoio at 10:7-14 (emphasis added).

2117. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller, as required in the claims. Muoio at 9:52-53.

2118. Since Muoio only discloses separate art space controllers and a local art server that pushes play lists to the art space controllers, Muoio does not disclose a display device that automatically initiates communications and issues a request for both image data and preferences ("package data") nor a server system that periodically relays image data and preferences in response to a request.

2119. Further confusing Dr. Johnson's positions, Dr. Johnson cites to portions of Muoio that refer to a user being able to set up "queries" that allow the *art server* to download art from the remote mass storage device based on the query, such as a query for art by a particular artist. Johnson ¶¶1148-1149; *see* Muoio, 4:27-41, 5:51-6:5, 8:54-9:25. For instance, see FIG. 5 showing an example query:

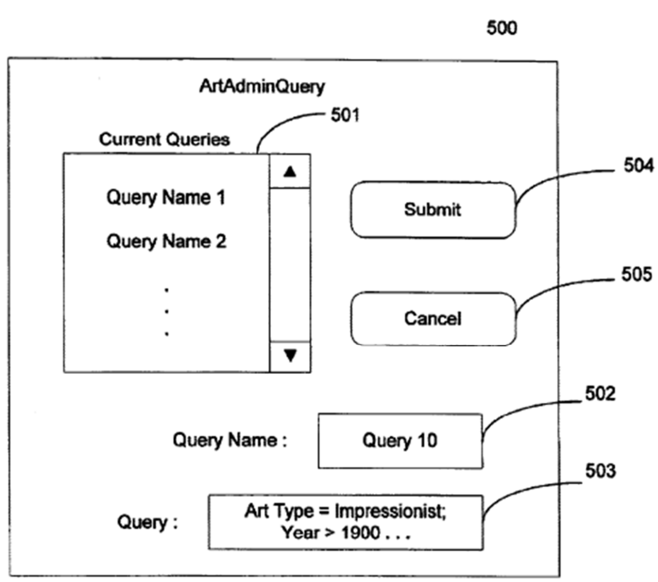


Figure 5

2120. However, these queries are not performed by a display device as required by the claim. Additionally, the Ceiva claims and specification clearly show that requesting images is entirely initiated by the display apparatus to avoid a user having to, e.g., "know how to navigate around the operating system and how to use the program utilized to obtain the data." See, e.g., '573 Patent at 3:32-37. In Muoio, queries require a user to know how to navigate and define queries using syntax average users would not be familiar with, such as "SQL." Muoio at 5:59-65. As such, a POSITA would not have looked to Muoio to solve the problems the Patents-in-Suit sought to address.

2121. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

v. Claim [6.] The system of claim 1 wherein input to said user interface is permitted when said user is authenticated by said at least one server system.

2122. Dr. Johnson first states "Muoio, in combination with Jacklin or Stylistic Tablet and Elgamal or RFC 2246" discloses this element, reasserting his positions on why he thinks a POSITA would combine these references together, including his positions regarding that Elgamal (SSL) or RFC 2246 (TLS) could be used to provide authentication in the Muoio system. Johnson ¶¶1244-1246.

2123. Specifically, Dr. Johnson asserts that Muoio discloses "an art distribution system in a museum setting may be controlled by a 'museum administrator' who is ***authorized*** to 'define play lists and [] specify on which display devices are the images of the play lists to be displayed.' *Id.* at 1:53-56." Johnson ¶1245 (emphasis added). Thus, Dr. Johnson takes the position that Muoio discloses an embodiment in which only an administrator is "authorized" to access an interface to make changes to play lists, and thus a POSITA would allegedly be motivated to include authentication in Muoi's system to first authenticate the administrator before letting the

administrator make changes. Dr. Johnson also asserts that since Muoio discloses users in the various rooms of the environment can use a user interface to make changes to images that are to be displayed, that, in environments such as homes, authentication may be desirable to allow only people who live there to make changes, and not guests or other visitors. Johnson ¶1245. These statements are misleading and disingenuous.

2124. First, Muoio does not disclose an embodiment in which only an "authorized" person is allowed to make changes. The word "authorized" does not even appear in Muoio - that is fiction created by Dr. Johnson. What Muoio actually discloses, ***in the background section***, is that, in prior systems like museum image display systems:

> a central computer system may control the displaying of a play list at various display devices throughout the museum. The central computer system may maintain a database of the images, and the museum administrator can define play lists and can specify on which display devices are the images of the play lists to be displayed. Such techniques for displaying art may be acceptable for museums, ***but may be unacceptable in other environments***. The techniques may be acceptable in a museum because only the administrator from a central location defines the play lists and specifies the display devices at which the play lists are to be displayed and because each image that can possibly be displayed needs to be stored at the central computer system before it is assigned to a play list.

Muoio at 1:51-64 (emphasis added).

2125. Muoio, in actuality, is pointing out that having an administrator[173] chooses the images to be displayed would be ***unacceptable*** in other environments, "such as a large house or an office building," where "it may be desirable to allow users to control the display of images from input devices throughout the environment." Muoio at 1:65-2:1. This "other environment" where users can control the images to be displayed using user control points near each display is exactly what Muoio is all about. Muoio at 2:11-59, 3:34-4:41, 3:52-54 ("The art distribution system allows

[173] Again, Dr. Johnson inserts his own words into Muoio here. Muoio does not mention an "authorized" administrator, but simply an "administrator."

a user to specify that a play list is to be displayed at any level in the hierarchy. For example, a user may specify that a certain play list is to be displayed throughout the east wing of the house, and the art distribution system will display that play list at every display device within the east wing.").

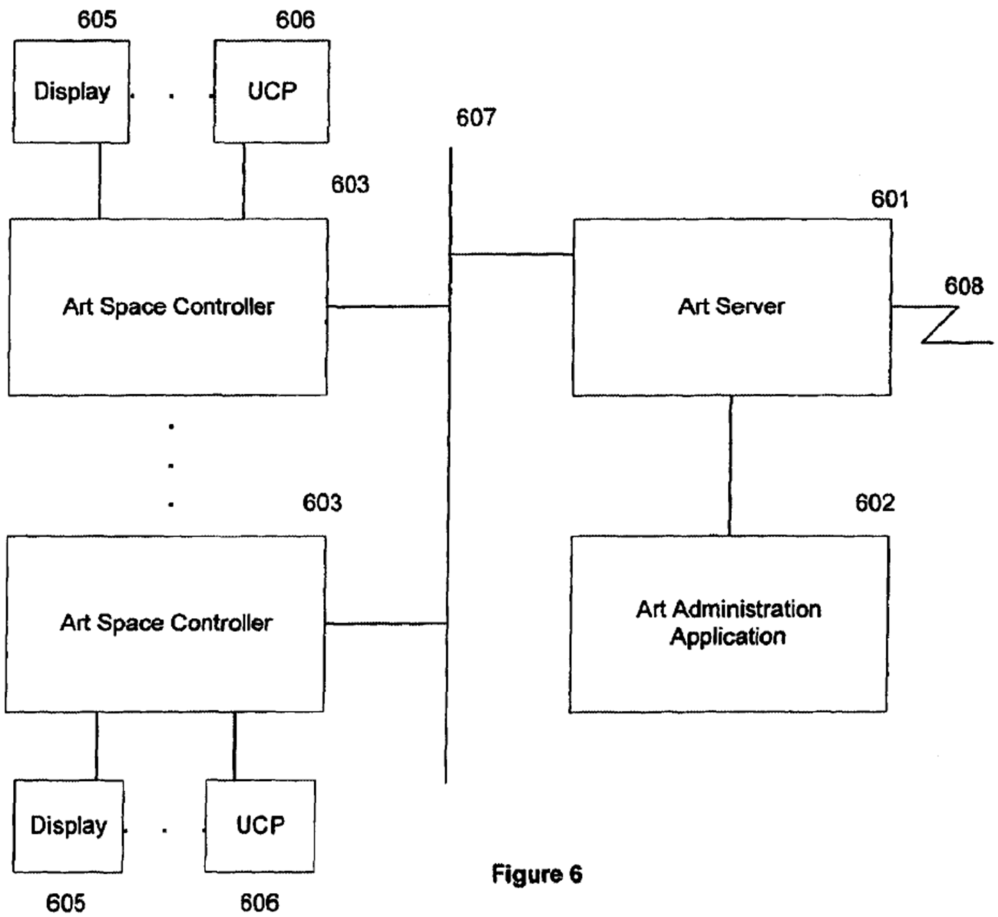


Figure 6

2126. Therefore, Dr. Johnson's statements that Muoio's system as only an "authorized" administrator that controls which images are to be displayed is incorrect, and Muoio actually teaches away from such a system.

2127. Turning to Dr. Johnson's other statement that, in Muoio, it may be desirable to lock people such as guests or visitors out of the system so that they cannot use the user interface to control play lists, Muoio includes no disclosure or suggestion of locking people out of the interface. Rather, since Muoio shows that a "guest room" can also include a display, art space controller, and

UPC, then it would seem guests would also be encouraged to use the system. Muoio at 3:44-48. In fact, the Muoio artwork system was part of a project to apply the Muoio artwork system in Bill Gates' house. Evidence shows that visitors to Bill Gates' house had free reign to change the artwork without having to be authenticated.[174]

2128. Also, it would also be extremely user-unfriendly to require someone to log in every time they tried to use one of the user control points. Muoio's disclosure, on the whole, emphasizes that users should be able to change the artwork on display whenever they wish. Further, as I explained in Section XIII.B.1, these user control points do not provide a user interface that obtains images from users and provide images to a server system.

2129. Also, as I explained in Section XIII.B.1 Elgamal and RFC 2246 deal with encrypting client-server communications using digital certificates, not with authenticating or logging in users to a user interface.

2130. Dr. Johnson also adds yet another reference to the growing combination of references to attempt to reach this claim element, Stahl. Johnson ¶1247. Dr Johnson asserts:

> Stahl discloses a server corresponding to a "service provider" that provides a "personal portal" to a user that "defines a user profile . . . specifying the information to be collected and the other services requested by the user." Stahl at 1:16-18. The user can define their user profile through being "presented with a series of graphical

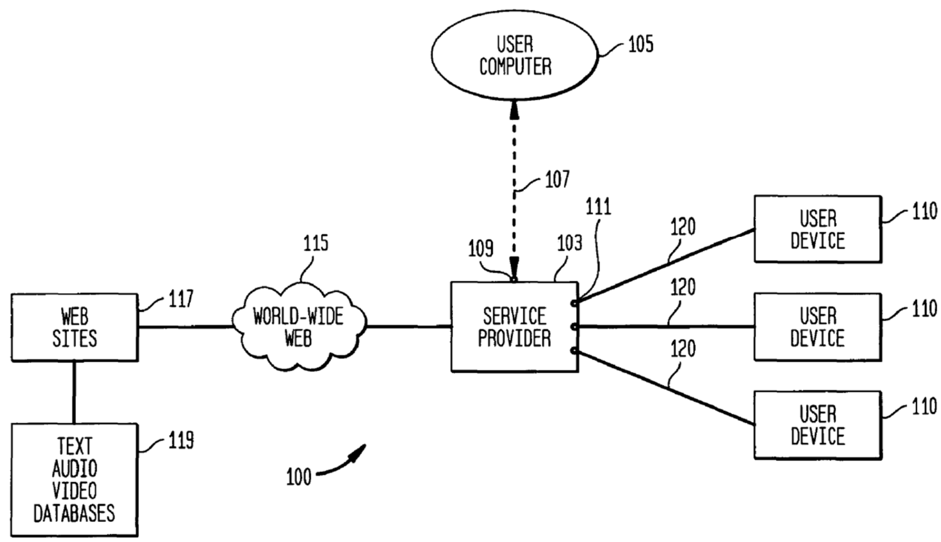
[174] https://www.eteknix.com/bill-gates-mansion-has-some-secrets/ ("On arrival at the Gates household, you'll be handed a little pin. his pin interacts with sensors built into the house, in turn, it then tracks your movement throughout the entire complex." "Many of the paintings in the house are digital, he has roughly $80,000 dollars of displays that then connect back to a $150,000 server farm. The server farm then has a nearly unlimited supply of artwork for ***you*** to switch to" (emphasis added); https://www.archute.com/bill-gates-house/ ("Unlike most houses that display actual paintings or art, Bill Gates's house features computer screens on the walls that display art and paintings. It is estimated that these wall screens are worth at least $80,000, and the art is stored on devices worth approximately $150,000. ***As a guest***, you can display your favorite pieces on these screens." Emphasis added)); https://economictimes.indiatimes.com/nation-world/peek-inside-bill-gates-124-million-mansion-xanadu-2-0/rotational-artwork/slideshow/56019674.cms ("***Anyone*** can make the screens display their favorite paintings or photographs, which are stored on devices worth $150,000.") (emphasis added).

> user interfaces (GUIs)" that "ask[] the user to enter or select preferences" for their profile. *Id.* at 4:48-54. In addition, Stahl discloses that the service provider "authenticates the user and login information for access to the network" before allowing the user to create their profile. *Id.* at 6:7-11; *see also id.* at 6:60-61 (user can also "change the selection of preferences" in their profile). A POSITA would have understood that authenticating the user provides security by only allowing the user associated with the user profile to define and/or change the user profile.
>
> In view of this disclosure, a POSITA would have found it obvious to modify the art distribution system of Muoio, based on the teachings of Stahl, to permit input to said user interface when said user is authenticated by said at least one server system. Here, Muoio's play lists acts as a user profile that the user can configure as described in Stahl to associate delivery of specified content to a particular device (e.g., a frame device). For example, like Muoio, Stahl discloses that that the user can, through a user interface, specify content to be delivered to a specific device. Stahl at 3:6-11 (user profile may specify content to be delivered to a particular device, such as the user's "office computer"). The POSITA would have found it obvious to modify Muoio based on the teachings of Stahl to authenticate the user before allowing the user to create and/or modify playlists, in the same way that Stahl authenticates the user before allowing the user to create and/or modify a user profile, to ensure that only authorized users are able to modify play lists/user profiles.

Johnson ¶¶1247-1248.

2131. Again, a POSITA would not even be motivated to add authentication to Muoio's system. Also, reviewing Stahl specifically, Stahl is directed to a subscription system in which a user can choose certain types of information to be automatically sent to user devices 110 from various websites, such as stock info, videos, music, etc. This is done via a web portal to communicate which content the user wishes to have transmitted from the websites, and a service provider then pulls content related to this information and transmits the information to the user device 110. Stahl at 4:54-5:5, 5:29-35, 6:5-10, 7:8-16. See FIG. 1 of Stahl:

FIG. 1



2132. Authenticating a user by having them log in to access services provided by a remote ISP for selecting remote content to be transmitted to user devices makes sense in the context of Stahl, but, again, there is no need for restricting users from accessing Muoio's UCP devices, and it runs counter to the disclosure in Muoio. Dr. Johnson's stated "motivations" to modify Muoio's system based on Stahl amounts to an argument that, since Muoio has a user interface, and Stahl has a user interface, then they are combinable. But like in many portions of Dr. Johnson's report, this is simply a statement that the system in Muoio *could* be modified, and not a reasons a POSITA *would be motivated* to modify Muoio.

2133. For at least the reasons described in this section, Muoio alone or in combination and Nishiyama do not anticipate or render obvious this claim limitation.

3. Claim 19 of the '573 Patent is valid in view of Muoio in combination with one of Criss or Kottapurath, alone or further in combination with one of Jacklin or Stylistic Tablet

i. Claim [19.a] at least one digital picture frame

2134. For this element, Dr. Johnson simply refers back to his discussion of claims 2 and 6. Johnson ¶1274.

2135. In reference to this claim limitation, Dr. Johnson claims the display device 100 and the art space controller of Muoio meets what he alleges to be a definition of a frame device in the '573 Patent at 6:35-39. Johnson ¶¶1101-1102. That section of the '573 Patent states: "The present invention comprises one or more interconnected frame devices. A frame device is a self-configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric (e.g., a computer network)." '573 Patent at 6:34-39.

2136. Specifically, Dr. Johnson asserts:

> The display device and associated art space controller is connected to an art server via a communications channel such as the Internet. *Id.* at 2:11-39, 6:6-29. Muoio's art distribution system maintains a database of images, and a user may specify that a playlist of images is displayed on certain ones of the display devices. *Id.* at 3:36-61. The art server transmits the images for display on the display devices according to the playlists. *Id.* at 7:6-13; *see id.* at 2:11-26 ("An art distribution system for distributing art to multiple display devices within an environment is provided. . . . The art distribution system allows a user to select a space within the hierarchy and then to select an image that is to be displayed at the display devices within the selected space."), 2:52-59, 3:44-57 ("Each space within the hierarchy may have one or more display devices within it. For example, the master bedroom may have several display devices that are capable of displaying art images."), 6:20-23 ("The art server communicates via communications channel 608 (e.g., the Internet) to an art mass storage device. The art mass storage device includes images and image information for accessible images."); 7:28-38 (discussing "retrieving the images from the art server and displaying the images on the associated display devices").

Johnson ¶1102.

2137. First, as shown above, Dr. Johnson asserts the display device is connected to the art server over the Internet. Muoio does not disclose or suggest this. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when

various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
  - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).
  - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.
- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).
  - This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2138. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

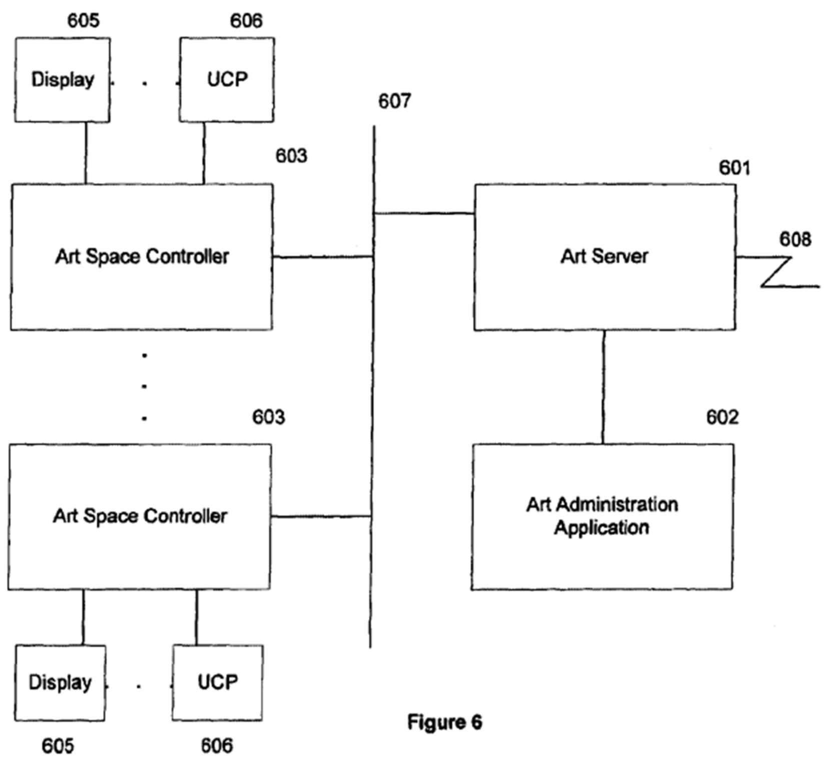


Figure 6

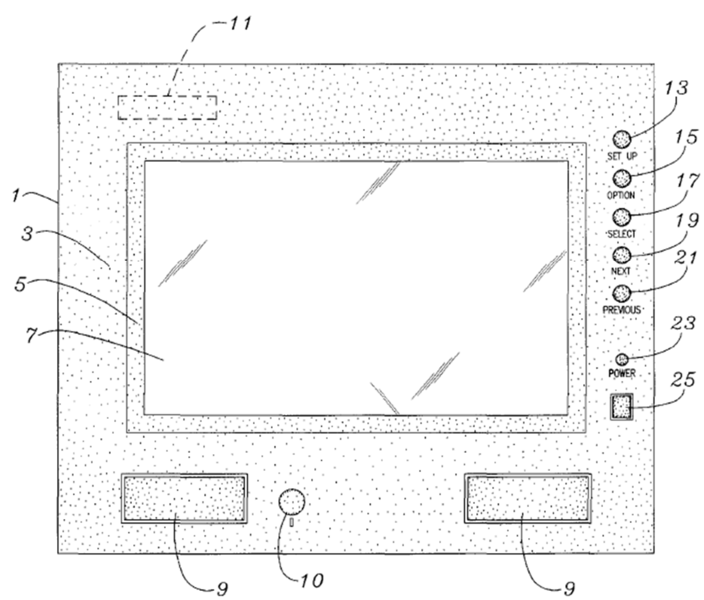
2139. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2140. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error.

2141. Additionally, the display device 605 and the art space controller 603 are not a part of the same device, and the display device 605 is not "self-configuring." The display devices are essentially monitor or television devices that have content displayed on them as via the art space controllers 603 and the user control points 606. Muoio at 6:27-29.

2142. Apparently recognizing Muoio's deficiencies, Dr. Johnson states: "[t]o the extent Muoio does not expressly disclose a frame device in the combination of an art space controller and digital display device, it would have been obvious to a POSITA, as of the earliest filing date of the '573 Patent, that the art space controller and associated digital display device could be implemented in a single computer system, such as the digital picture frame of Jacklin or the Stylistic Tablet." Johnson ¶1103. As I explained in Section XIII.b, Jacklin is a digital picture frame, shown for example below:

Fig. 1



2143. As I explained in Section XIII.c, Stylistic Tablet is a tablet computer device, shown for example below.

2144. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> A POSITA, as of the earliest filing date for the '573 Patent, would have been motivated to combine Jacklin's digital picture frame or Stylistic Tablet with Muoio's client-server system to provide a digital art display frame. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device containing the art display that displays the images distributed by Muoio's art distribution system, and its associated art space controller. A POSITA would have been motivated to make this combination based on the teachings of Jacklin and/or Stylistic Tablet of a frame device containing a display and a controller for controlling the display of images on the display. *See, e.g.*, Jacklin at 4:10-23 ("electronic apparatus for displaying images" includes a CPU and "means of . . . displaying each of said plurality of bits of video and audio data"), FIG. 1; Stylistic 1000 RF Overview ("The Stylistic 1000 RF is powered by a 100 megahertz (MHz) 486 processor" and includes an "8-inch LCD[]"). The combination would have involved combining prior art elements according to known methods to yield predictable results, e.g., combining Muoio's art space controller and digital display device into a frame device in the same manner in which Jacklin and/or Stylistic Tablet each teach a frame device having a controller and display.

Johnson ¶1106.

2145. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2146. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio, but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2147. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead, Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2148. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2149. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2150. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ii. Claim [19.c] configured to operate according to preferences defined by a user,

2151. For this element, Dr. Johnson simply refers back to his discussion of claims 2 and 6. Johnson ¶1277.

2152. Dr. Johnson again cites portions of Muoio that discuss play lists and that users can modify play lists using the user control point, and alleges that this means the display devices 605 are configured to operate according to preferences comprising an image display list defined by a user. Johnson ¶¶1108-1111.

2153. However, as I described above, it is the art space controller 603 of Muoio that receives images from the local art server 601 and handles play lists, not the display device. The display devices 605 of Muoio are "dumb" devices akin to a traditional large computer monitor or television screen that merely receive images for display from an outside source, in this case the art space controller 603. Therefore, the display devices 605 in Muoio are not configured to operate according to preferences comprising an image display list defined by a user.

2154. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iii. a user interface . . . [19.g] configured to obtain image data and said preferences from said user [19.h] and provide said image data and said preferences to said at least one server system

2155. For this element, Dr. Johnson simply refers back to his discussion of claims 2 and 6. Johnson ¶¶1279-1282.

2156. This element of claim 1, in its entirety, recites "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system."

2157. Dr. Johnson asserts that the "user interface at a user control point device" is the claimed user interface. Johnson ¶¶1120-1130.

2158. First, it is again emphasized that Dr. Johnson has mischaracterized Muoio's disclosure of communicating with a mass storage device over the Internet and its disclosure of the

art server being local to the display devices and display controllers. Muoio discloses two communication channels 607 and 608. Communication channel 607 is a local communications channel "on the same computer system," Muoio at 6:17-20, where the art space controllers control Muoio's display devices 605 and user control point devices 606. The art server stores images to be displayed by the display devices locally, as evidenced by Muoio's disclosure that the purpose of Muoio's system is to provide a local system within a user's home. *See* Muoio at 3:54-61.

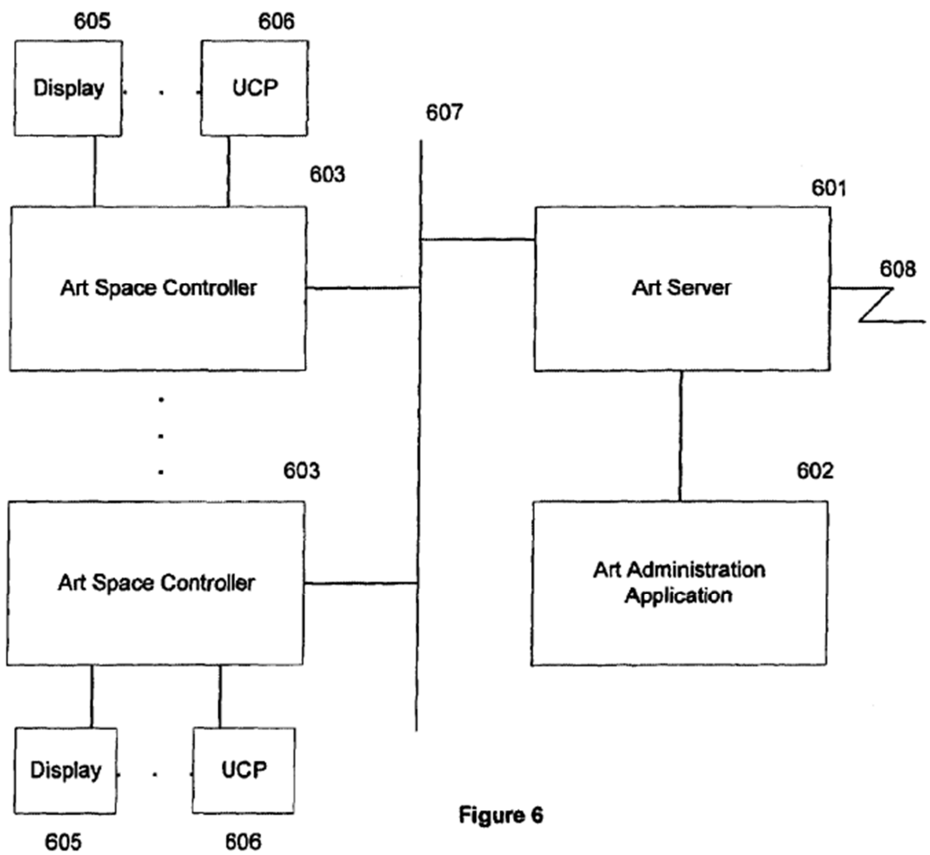


Figure 6

2159. Communications channel 608 is used by the art server to communicate with a remote mass storage device to transmit queries for art. Muoio at 6:17-23, 8:54-65. Even if, *arguendo*, one were to interpret the local communications channel 607 as providing the claimed "network," a specific problem identified in the Patents-in-Suit is that "a person who does not have

physical access to the device cannot introduce new images into the device. Moreover, the device cannot be controlled from a remote location. For example, making changes to a website cannot control the behavior of the control mechanism." '573 Patent at 2:17-23. In Muoio, for a user to personally provide image data to be stored on the art server, the user must be physically present at the location of the art distribution system, and Muoio discloses that the art administration application 602 of the art server 601 receives new images from an art input device 807 such as a scanner. Muoio at 8:7-28. Muoio explicitly states that:

> FIG. 8 is a block diagram illustrating components of the art administration application in one embodiment. The art administration application includes an art administration controller 801, an art server interface 802, a manage play list component 803, an assign play list component 804, and a submit query component 805. The art administration application interfaces with 1/0 devices 806, such as a keyboard and display, and interfaces with an art input device, such as an image scanner.

Muoio at 7:13-22.

2160. As shown in FIGS. 6 and 8 below, the art administration application is part of the art server, located in a different area of the environment from the art space controllers and the display devices:

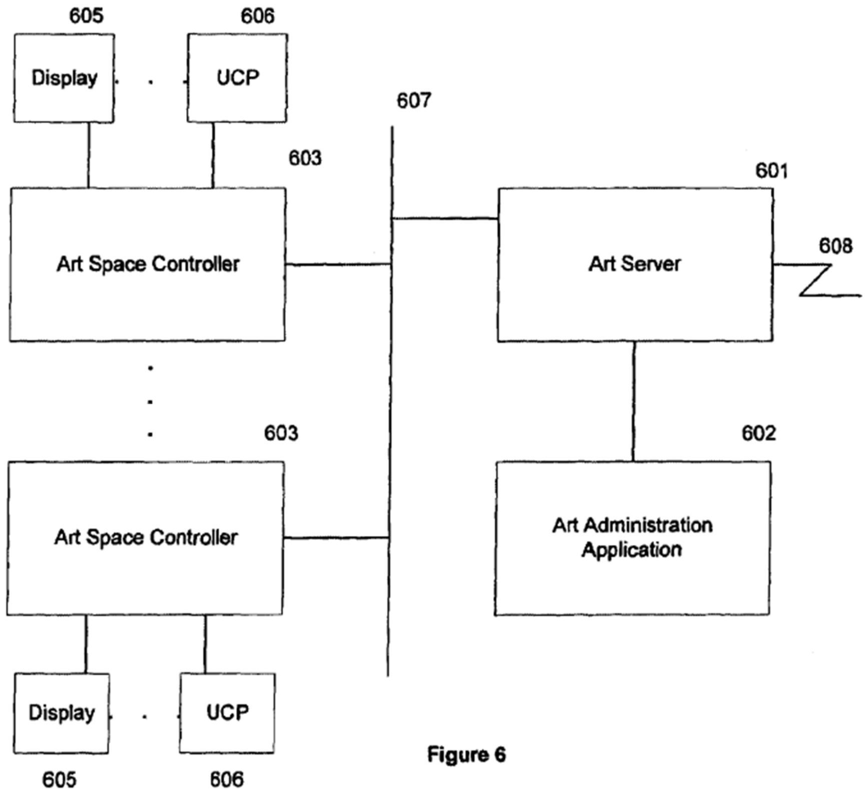


Figure 6

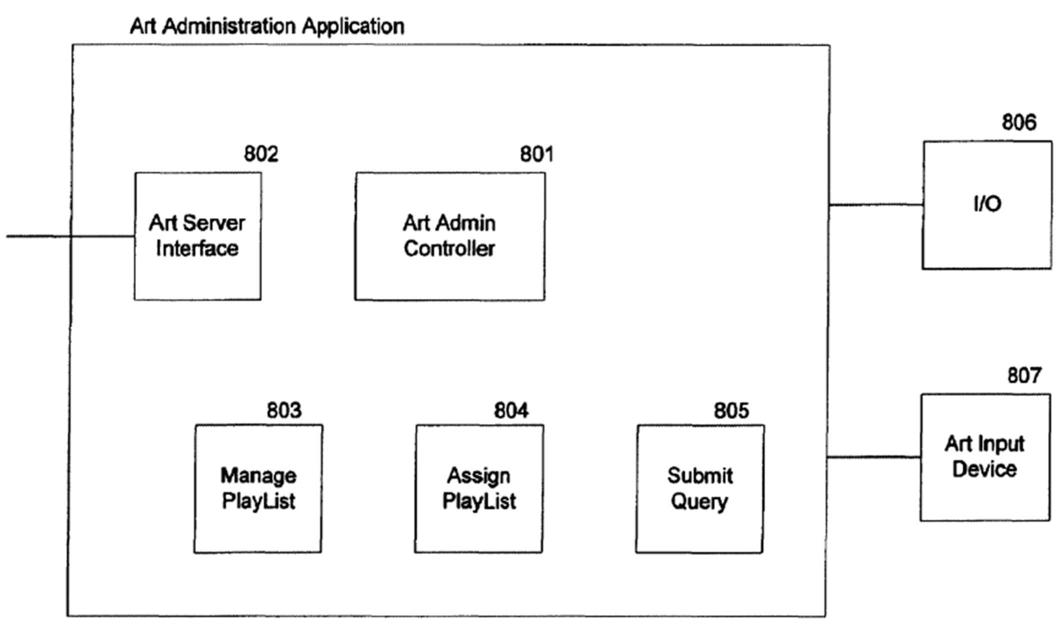


Figure 8

2161. The claims require that the user interface is "configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system." '573 Patent, Claim 1. Muoio's user interface relied on in the claim charts is provided by the user control point device 606, Muoio at 4:55-57, and is shown in FIGS. 2-5 below:

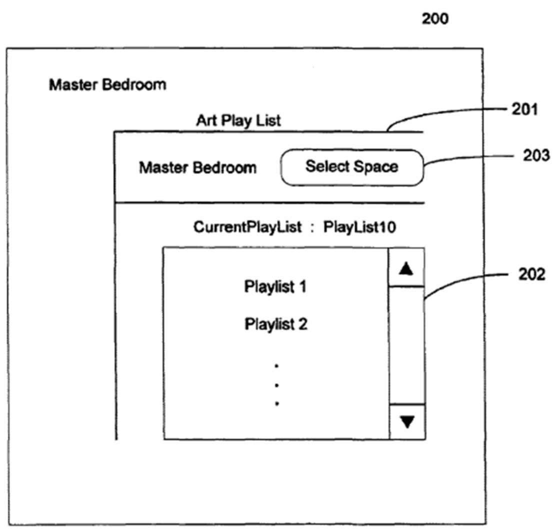


Figure 2

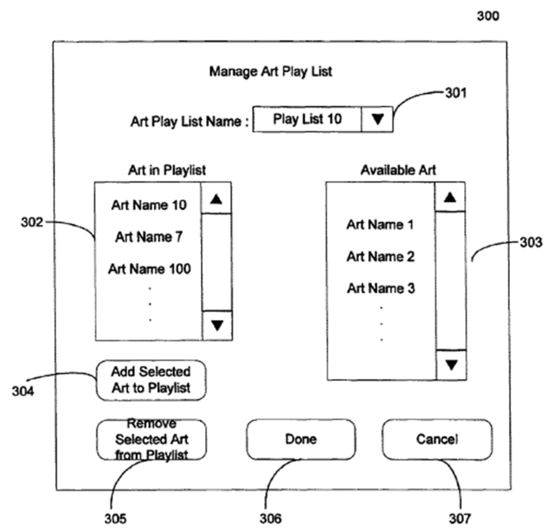


Figure 3

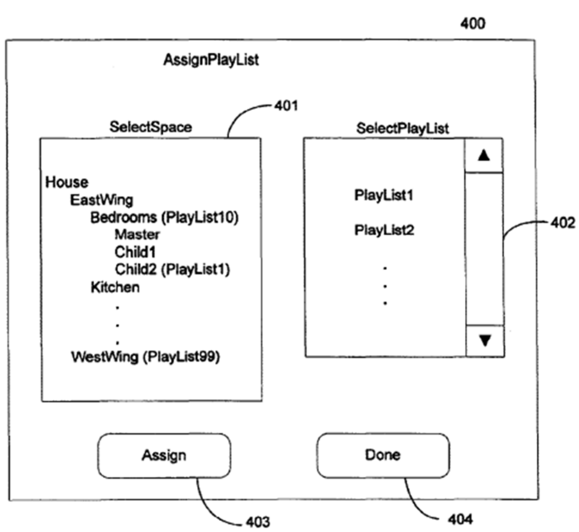


Figure 4

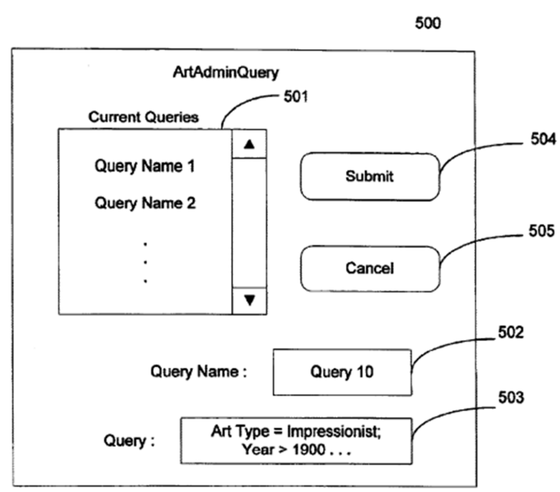


Figure 5

2162. As shown above, the user interface allows a user to configure playlists at the user control point device 606, but the figures do not illustrate any elements relating to providing images by the user. Again, the only disclosure of providing images by a user is related to a user scanning in images via an art administration application at the art server, and there is no specific reference to a "user interface" in this disclosure, but just that a server controller receives the images and provides them to a database at the art server for storage. Muoio at 8:19-24. As I have pointed out, Muoio describes its purpose as allowing for users to select artwork for display at various art space controller-UCP-display device setups distributed throughout a building. Muoio at 1:65-67; 3:35-65. In light of this purpose, it is only logical that the system would not include scanners at the various art space controller-UCP-display device setups, as suggested by Dr. Johnson's mischaracterization of Muoio's system, but, rather, as described in Muoio, image input devices like a scanner would be situated near the art server.

2163. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

2164. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iv. Claim [19.j] wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one digital picture frame when said at least one digital picture frame automatically issues a request for said image data

2165. For this element, Dr. Johnson simply refers back to his discussion of claims 2 and 6. Johnson ¶1284.

2166. Dr. Johnson asserts that Muoio discloses these elements, asserting that the description in Muoio, such as at 9:47-10:3, shows relaying image data and preferences in response to an automatic request, and that this occurs periodically. Johnson ¶¶1145-1152. This is incorrect.

2167. Muoio does not disclose or suggest relaying image data and preferences to display devices in response to display devices automatically initiating communications with a server and issuing a request for image data. In Muoio, a portion relied upon by Dr. Johnson states:

> FIG. 17 is a flow diagram of the processing of an art display module. The art display module overlaps the displaying of an image with retrieving from the art server of the next image to be displayed. The module continually displays the images in the play list by displaying the first image in the play list after the last image is displayed. The art display module is provided with a display list. In step 1701, the module selects the first image in the display list. In step 1702, the module retrieves the selected image from the art server. In steps 1703-1707, the module loops displaying the images in the play list at the specified intervals. In step 1703, the module displays the last retrieved image. In step 1704, the module selects the next image in the display list. In step 1705, the module retrieves the selected image from the art server. In step 1705, the modules pauses for the requisite interval or until a user touches the panel. In step 1706, if the user touches the panel, then the module continues at step 1707, else the module loops to step 1703 to select and display the last retrieve image. In step 1707, the function displays the information relating to the current image and then loops to step 1705 to pause. The display of the information corresponds to FIG. 1. In one embodiment, the module may cache the images so that each image of a play list only needs to be retrieved once.

Muoio at 9:47-10:3.

2168. First, as shown above, it is Muoio's art space controllers that performs this process, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2169. Also, the art server *pushes* play lists to art space controllers independent of any request:

> In step 1802, the module displays the user interface for the user control point device. In step 1803, if the user indicated to assign a new play list the space, then the module continues at step 1804, else the module returns. In step 1804, the module notifies the *art server* to change the play list assignment for the space. **The *art server* then sends out an event to notify the art space controllers that the play list has changed.**

Muoio at 10:7-14 (emphasis added).

2170. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller, as required in the claims. Muoio at 9:52-53, Muoio at 9:53-56.

2171. Since Muoio only discloses that separate art space controllers retrieve images after play lists are pushed to the art space controllers, Muoio does not disclose a display device that automatically initiates communications and issues a request for both image data and preferences nor a server system that periodically relays image data and preferences in response to each request.

2172. Further confusing Dr. Johnson's positions, Dr. Johnson cites to portions of Muoio that refer to a user being able to set up "queries" that allow the *art server* to download art from the remote mass storage device based on the query, such as a query for art by a particular artist. Johnson ¶¶1148-1149; *see* Muoio, 4:27-41, 5:51-6:5, 8:54-9:25. For instance, see FIG. 5 showing an example query:

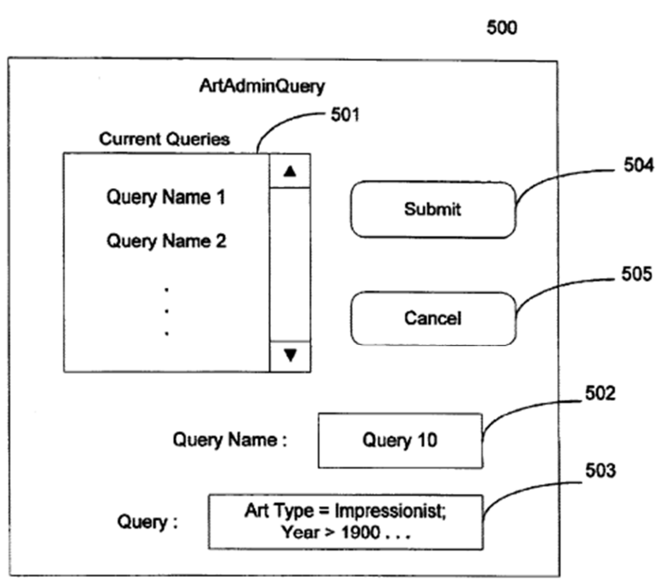


Figure 5

2173. However, these queries are not performed by a display device as required by the claim. Additionally, the Ceiva claims and specification clearly show that requesting images is entirely initiated by the display apparatus to avoid a user having to, e.g., "know how to navigate around the operating system and how to use the program utilized to obtain the data." See, e.g., '573 Patent at 3:32-37. In Muoio, queries require a user to know how to navigate and define queries using syntax average users would not be familiar with, such as "SQL." Muoio at 5:59-65. As such, a POSITA would not have looked to Muoio to solve the problems the Patents-in-Suit sought to address.

2174. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

v. Claim [19.k] and wherein said at least one digital picture frame is configured to obtain an update for said operating system software from said at least one server system.

2175. For this claim element, Dr. Johnson refers back to his previous analysis regarding unasserted Claim 4, and so I have reviewed that analysis here. In reference to the claim element [4.k], Dr. Johnson states: "Although Muoio does not expressly disclose a method or process by which the art space controller obtains an operating system software update from the art server system, the concept of updating the operating system of a device from a server system was a well-known method for managing client-server systems before the earliest filing date of the '573 Patent." Johnson ¶1228.

2176. First, I note that the art space controllers and the display devices of Muoio are separate devices, as I explained in Section XIII.b. I do agree with Dr. Johnson that Muoio does not disclose any method or process to obtain an update for software.

2177. Dr. Johnson then combines, in the alternative, each of Criss and Kottapurath with Muoio to attempt to meet this claim element. Johnson ¶¶1229-1243. However, it should be also

noted that neither Criss nor Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2178. A POSITA would recognize that an operating system is complex and, while updating operating systems remotely is common in 2023, it was not always quite so common. As an example of an operating system, Dr. Johnson cites, elsewhere in his report, Windows 98 as prior art. The book *Using Windows 98 Platinum Edition*[175] has a section on updating Windows 98. That section is three pages long (pages 292 to 294) with multiple steps. These steps must be executed by a user:

a. Click Start and click the Windows Update icon. Internet Explorer comes up automatically and attempts to connect to Microsoft Windows Update site shown in figure 16.1.

[175] Bott, E., & Person, R. (1998) *Using Microsoft Windows 98 with Cdrom*. Que Corp.

b. Click on Update Wizard. A registration wizard pops up if this is the first time you have used the Update Wizard (see figure 16.2). You must fill out the registration to continue. Part of the registration is to upload your configuration files to Microsoft. You can deselect a check box, so this doesn't happen if you want to.

c. The Update Wizard web page contains two options. Update and Restore. Click Update to scan the internet for updated system files. A new Internet Explorer window pops up, as shown in figure 16.3. The update Wizard loads necessary components into your system and then scans the database for updated drivers.

d. As updates are found the wizard refreshes the screen and the list of files available for update. Select a file in the list on the left to see its description as well as its size, and approximate download time on the right side of the main windows.

e. Click on Install to install the file. Only one file can be installed at a time, and your computer may need to be restarted after a file is installed. Let the computer restart, if necessary, before downloading a second update in order to verify that it is still working properly.

2179. The section goes on to discuss the various problems that can arise when updating Windows 98. But even if everything goes smoothly, an operating system consists of numerous individual files and applications. Windows 98 required a user to individually download and install these one at a time, with potentially numerous pauses to restart the system.

2180. Dr. Johnson not only does not address the issues inherent in updating an operating system, but he places unfounded inference upon unfounded inference. Muoio does not disclose updates at all. Taking two pieces of prior art, neither of which disclose updating an operating

system, and combining them, still does not disclose or render obvious updating an operating system.

2181. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Muoio. Criss is related to managing cellular networks, not to the field of consumer home/office display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2182. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

2183. Claim 19 requires the at least one digital picture frame obtain operating system updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the frame device simply requests data from the server without needing to refer to specific files or data needed. The

Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit.

2184. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶1232-1233. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

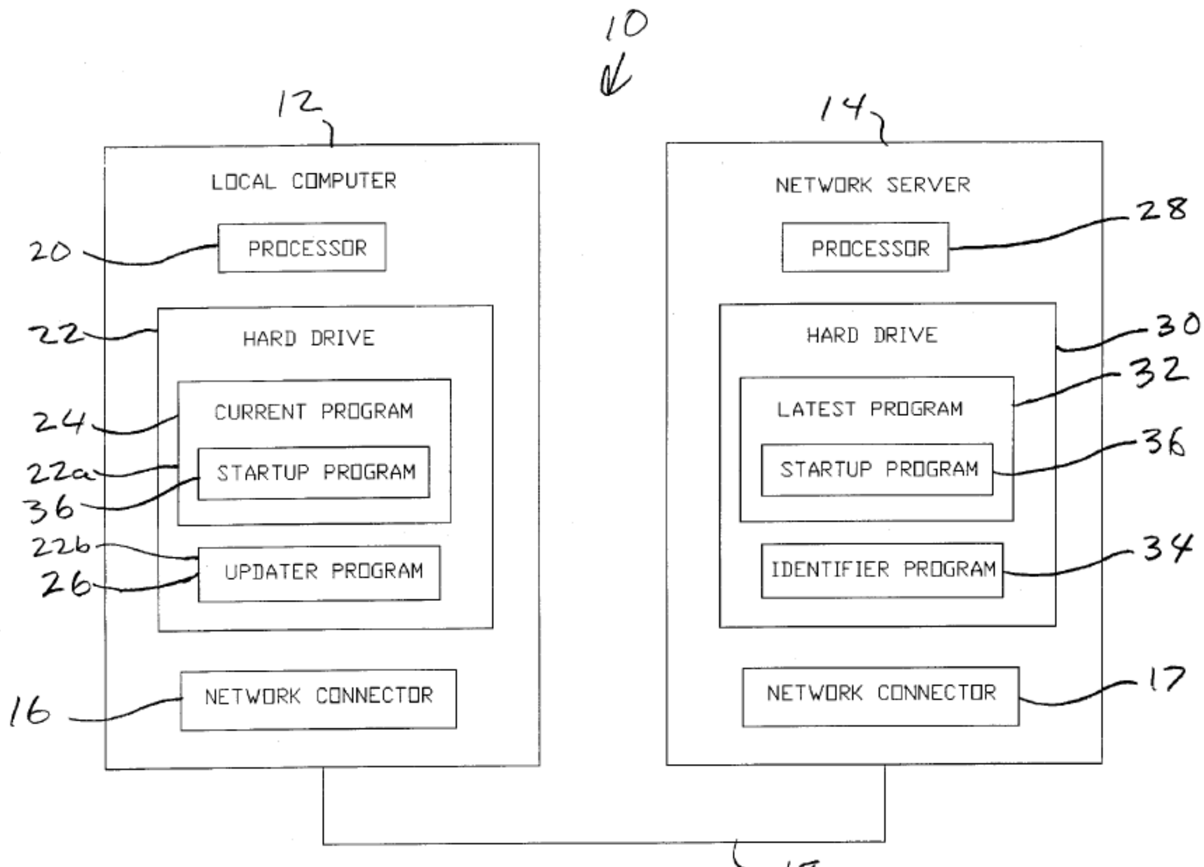


Fig. 1

2185. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

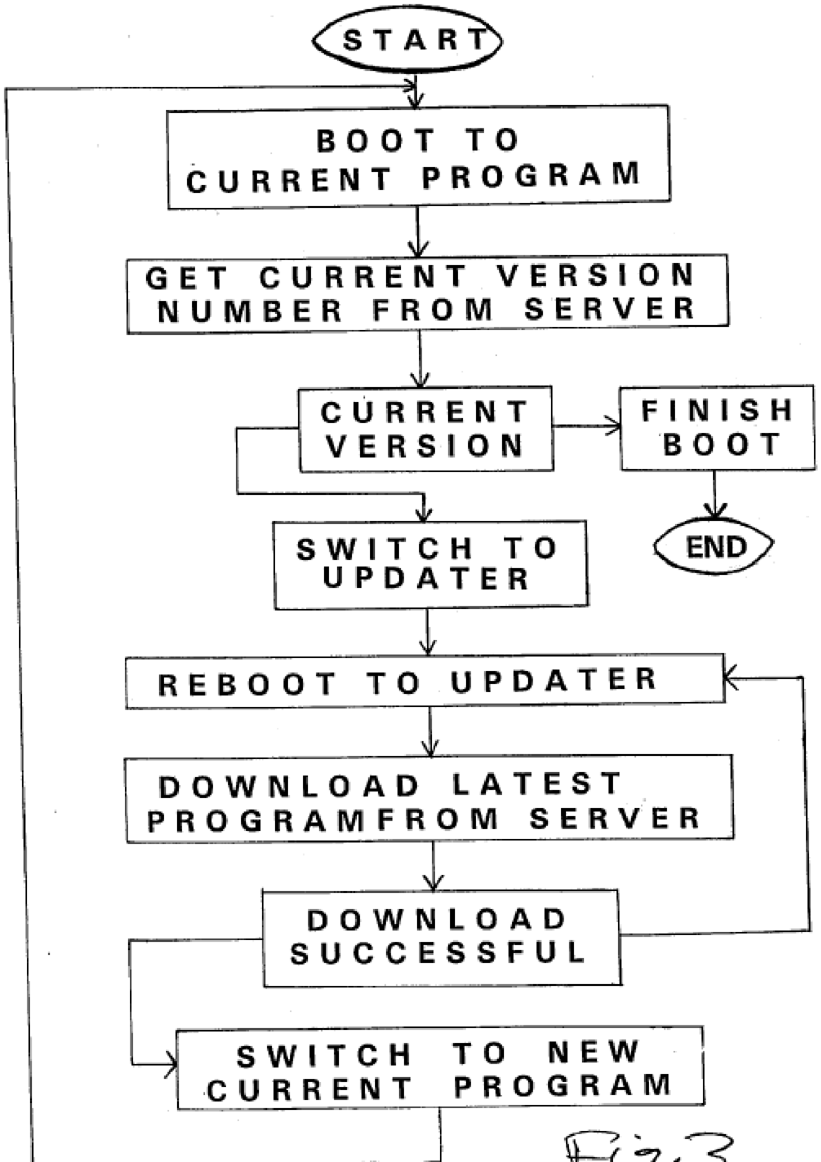


Fig. 3

2186. Dr. Johnson then states: "a POSITA would have been motivated to combine the software update functions described in Criss or Kottapurath with Muoio's client-server system to provide art controller software updates through the central art server system." Johnson ¶1234. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's art space controllers specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controllers somehow to obtain software updates from the local art server. As has been

pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2187. Furthermore, a POSITA would recognize that Criss is dedicated to upgrading specific software on a mobile device (Criss 1:20-25; 2:51-54;3:1-7)) Muoio and Criss are not even directed towards the same problem. Furthermore, Criss requires a substantial infrastructure in order to update software. "According to one embodiment, a wireless communication System includes a system backbone, a host computer coupled to the system backbone, at least one base station coupled to the system backbone, the at least one base station including a base station transceiver for communicating wirelessly with mobile devices within the system, and at least one mobile device having a mobile device transceiver for communicating wirelessly with the host computer on the system backbone via the at least one base station. The at least one mobile device includes a software update Schedule table for providing one or more times at which the mobile device is to inquire and obtain available Software upgrades." (Criss 2:55-67). It should be noted that 'base station' does not apply only to this embodiment, but is in fact mentioned 80 times in Criss (e.g., Criss 3:31-39; 3:56-4:8; Figure 6; Claim 1; Claim 14).Dr. Johnson does not discuss the need for a system backbone, host computer, and base station. The base station in particular is central to Criss being able to update software. Dr. Johnson does not discuss the base station in relation to this claim element, nor how it would be combined with Muoio.

2188. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss or Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Muoio.

2189. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

4. Claims 1-3, 7, and 8 of the ’930 Patent are valid in view of Muoio in combination with one of Elgamal or RFC 2246, and one of Criss or Kottapurath, alone or further in combination with one of Jacklin or Stylistic Tablet, alone or further in combination with Nishiyama

i. Claim [1.pre] A digital display apparatus having an integrated housing, said integrated housing comprising

2190. Dr. Johnson asserts that Muoio has a display apparatus with an integrated housing because Muoio discloses display devices 605. Johnson ¶¶1287-1289.

2191. But Dr. Johnson takes this claim element out of context and ignores that it is the display apparatus having an integrated housing that includes the other components and performs other functions of Claim 1 that the display device 605 of Muoio does not include or perform. As shown in FIG. 6 of Muoio below, the art space controller 603, which Dr. Johnson alleges performs most of the claimed functions, is a separate device from the display device 605 that Johnson asserts is a display device having an integrated housing. The display devices 605 are essentially “dumb” monitor or television devices that have content displayed on them as via the art space controllers 603 and the user control points 606. Muoio at 6:27-29.

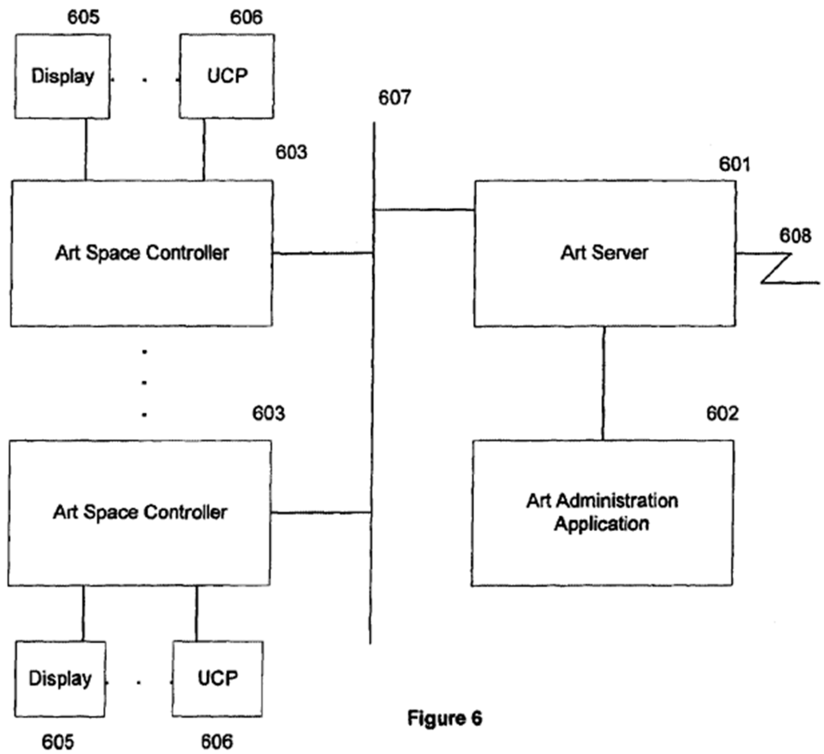
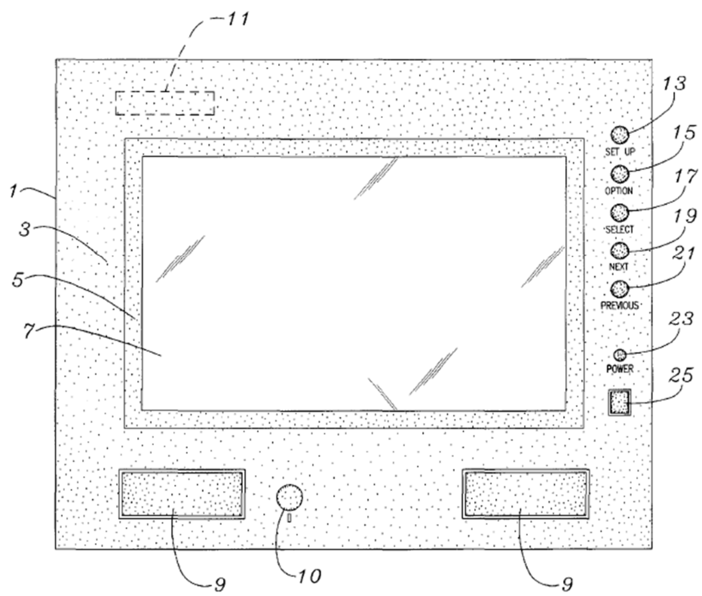


Figure 6

2192. Apparently recognizing Muoio's deficiencies, Dr. Johnson states: "[t]o the extent Muoio does not expressly disclose a digital display apparatus having an integrated housing in the combination of an art space controller and an associated digital frame display, it would have been obvious to a POSITA, as of the earliest filing date of the '930 Patent, that the art space controller and associated digital frame display could be implemented in a single apparatus, such as Jacklin's digital picture frame or Stylistic Tablet." Johnson ¶1290. As I explained in Section XII.C, Jacklin is a digital picture frame, shown for example below:

Fig. 1



2193. As I explained in Section XII.M, Stylistic Tablet is a tablet computer device, shown for example below.

2194. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> Moreover, a POSITA, as of the earliest filing date for the ’930 Patent, would have been motivated to combine Jacklin or Stylistic Tablet with Muoio’s client-server

> system to provide a digital art display frame to simplify the architecture of the art distribution system by implementing the art space controller and associated digital frame display into a single apparatus, such as Jacklin's digital picture frame or Stylistic Tablet. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device that displays the images distributed by Muoio's art distribution system. The combination is a simple substitution of one known element for another to obtain predictable results.

Johnson ¶1294.

2195. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2196. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio, but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2197. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead,

Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2198. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2199. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to

cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2200. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ii. Claim [1b.] a memory in an inside of said integrated housing, [1.c] said memory comprising a plurality of image data files,

2201. Muoio does not disclose its display devices 605 include a memory, much less a memory that includes a plurality of image data files. Dr. Johnson relies on his alleged combination of Muoio with one of Jacklin or Stylistic Tablet, asserting that, if one were to replace the display device 605 in Muoio with Jacklin's digital picture frame or the Stylistic Tablet, then the display device in Muoio would have a memory that stores image files. Johnson ¶¶1310-1311.

2202. But, as I explained above, a POSITA would not be motivated to combine Muoio with Jacklin or Stylistic Tablet, and Dr. Johnson has provided no reasons why a POISTA would be motivated to do so.

2203. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iii. Claim [1.d] security information comprising authentication information for a first remote server system

2204. Dr. Johnson admits that Muoio does not disclose authentication at all, much less storing security information in memory of a display apparatus. Johnson ¶1313.

2205. Dr. Johnson also admits that Muoio does not disclose authentication, but asserts that Muoio could be combined with one of Elgamal (SSL) or RFC 2246 (TLS) to provide authentication in Muoio's system between the art space controllers and the art server. Johnson ¶¶1315-1321. Dr. Johnson asserts a POSITA would be motivated to implement authentication between the art space controllers and the art server because "[a] POSITA . . . would have been

motivated to combine Muoio with the security and device authentication features, including the security handshaking and use of server certificates, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and authenticate the devices within Muoio's client-server (art controller and associated display device—art server system) image distribution system." Johnson ¶1320.

2206. But, as I explained in Section XIII.A the art server and the art space controllers are within a local network, i.e., a local network in the same building, and do not communicate over the Internet. Thus, Muoio does not disclose a "first ***remote*** server system," as required by this claim element. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
    - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).
    - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to

the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.

- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).
    - This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2207. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

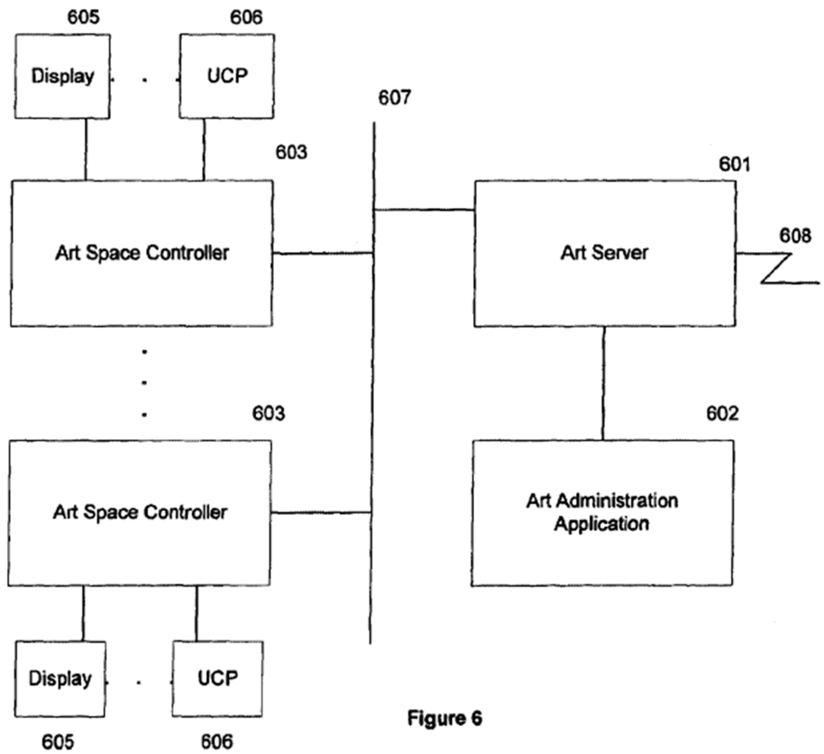


Figure 6

2208. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2209. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error. Dr. Johnson also asserts that a POSITA would be motivated to combine Muoio and Elgamal or RFC 2246 "to prevent malicious activities by ensuring that the apparatus is communicating, and receiving data from, the correct server." Johnson ¶1320.

2210. This is illogical. Elgamal and RFC 2246 emphasize they are directed to communications between entities over the public Internet. Elgamal at 1:63-2:22; RFC 2246 at 1. While some local networks could benefit from certain security protocols, Muoio's system is a

fairly simple local system that has a small art space controller device pull images stored on a larger art server computer that acts as a storage device in a real-time manner (that is, as the art space controller reaches each image in a play list). Muoio at 9:47-10:3. A POSITA would see little need to implement security measures such as encryption and authentication between the art space controllers and the local art server.

2211. Although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Muoio. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶1316-1319. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[176] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[177] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2212. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates.

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[176] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[177] *Id.*

Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2213. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2214. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2215. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2216. Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Also, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2217. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2218. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iv. Claim [1.e] and a unique identifier for said digital display apparatus,

2219. Dr. Johnson admits that Muoio does not disclose or suggest storing in memory of a display apparatus a unique identifier for said digital display apparatus. Johnson ¶1323.

2220. Dr. Johnson then attempts to combine Nishiyama with Muoio. As I explain throughout this report, Dr. Johnson ignores that Muoio and Nishiyama are in entirely different fields. The USPTO primary classification for Muoio is 345/1.1. Class 345[178] is *Computer Graphics Processing and Selective Visual Display Systems*. Subclass 1.1 is *Plural Display Systems*. The

[178] https://www.uspto.gov/web/patents/classification/uspc345/sched345.htm

USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[179] The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[180] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

2221. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Muoio, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

2222. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Johnson ¶¶1326-1328. Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted

[179] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

[180] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

2223. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

2224. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶1327. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *see, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier."), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

2225. For Dr. Johnson's combination of Muoio with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Muoio with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

2226. As I have explained, SSL and TLS were both intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop

computers).[181] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[182] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2227. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2228. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2229. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio

[181] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[182] *Id.*

discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2230. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2231. Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Also, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2232. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2233. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

v. Claim [1.f] and a current version of onboard software;

2234. Dr. Johnson, without citing any evidence, asserts that it would be obvious for the art space controllers of Muoio (which again are not digital display apparatuses) to store a current version of onboard software because the art space controllers have software. Dr. Johnson states:

> Furthermore, it would have been obvious to a POSITA as of the earliest filing date of the '930 Patent to store a current version of the operating system or onboard software of the art space controller to allow the system to work properly. It was well known to a POSITA that software, such as operating system software or other onboard may have different versions that are released over time as the software is updated. A version currently stored in the art space controller is the current version. A POSITA would have also recognized that the current version may be the latest version, and a POSITA would have been motivated to store the latest version of the onboard software in the art space controller to provide it with the latest feature set and bug fixes.

Johnson ¶1331.

2235. Dr. Johnson thus assumes that Muoio is meant to support software updates, which are not disclosed in Muoio. Dr. Johnson then further assumes that Muoio could facilitate software updates by storing a version number, which is also not disclosed in Muoio. In addition to basing assumptions upon assumptions, Dr. Johnson also ignores other ways software can be updated including:

a. Simply installing the latest version over whatever is already on the device, regardless of what version it is; and

b. Simply using the date stamp of the file and updating if something with a later date stamp is available.

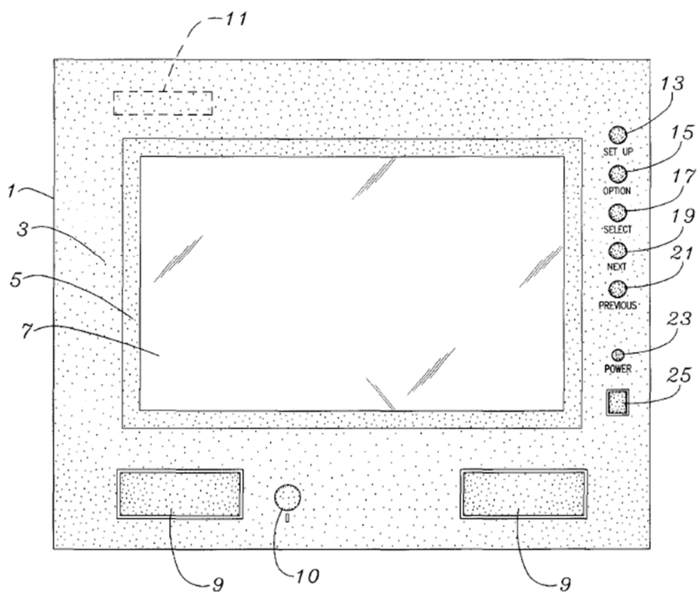
2236. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

vi. Claim [1.g] a processor configured to control the display of image data from said plurality of image data files in said image display region in accordance with said onboard software in said inside of said integrated housing; [1.h] communication circuitry configured to engage a network medium in said inside of said integrated housing under the control of said processor; [1.i] wherein said onboard software comprises: an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region

2237. Dr. Johnson asserts that Muoio alone or combination with Jacklin or Stylistic Tablet discloses these elements. Johnson ¶¶1333-1352. However, as I have explained, the art space controller that Dr. Johnson relies on is a separate device from the display device in Muoio, and Muoio discloses nothing regarding the structure of the display device 605. Thus, Muoio does not have a display device with a processor configured to control the display of image data from said plurality of image data files in accordance with said onboard software in said inside of said integrated housing, nor communication circuitry under the control of said processor, nor onboard software that comprises an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region.

2238. Dr. Johnson again asserts that Jacklin or Stylistic Tablet could be used to provide display devices with explicitly disclosed memory and processors, but, again, Dr. Johnson provides no compelling motivations to combine Muoio with either Jacklin or Stylistic Tablet. As I explained in Section XIII.b, Jacklin is a digital picture frame, shown for example below:

Fig. 1



2239. As I explained in Section XII.M, Stylistic Tablet is a tablet computer device, shown for example below.

2240. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> A POSITA, as of the earliest filing date for the '573 Patent, would have been motivated to combine Jacklin's digital picture frame or Stylistic Tablet with

> Muoio's client-server system to provide a digital art display frame. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device containing the art display that displays the images distributed by Muoio's art distribution system, and its associated art space controller. A POSITA would have been motivated to make this combination based on the teachings of Jacklin and/or Stylistic Tablet of a frame device containing a display and a controller for controlling the display of images on the display. *See, e.g.*, Jacklin at 4:10-23 ("electronic apparatus for displaying images" includes a CPU and "means of . . . displaying each of said plurality of bits of video and audio data"), FIG. 1; Stylistic 1000 RF Overview ("The Stylistic 1000 RF is powered by a 100 megahertz (MHz) 486 processor" and includes an "8-inch LCD[]"). The combination would have involved combining prior art elements according to known methods to yield predictable results, e.g., combining Muoio's art space controller and digital display device into a frame device in the same manner in which Jacklin and/or Stylistic Tablet each teach a frame device having a controller and display.

Johnson ¶1106.

2241. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2242. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio, but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2243. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes

"a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead, Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2244. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2245. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would

discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2246. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

vii. Claim [1.j] a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, [1.k] said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications [1.l] and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files;

2247. For these claim limitations, Dr. Johnson refers back to his discussion of claims 2 of the ’573 Patent. Johnson ¶¶1353-1359.

2248. Dr. Johnson asserts that Muoio discloses these elements, asserting that the description in Muoio, such as at 9:47-10:3, shows relaying image data in response to an automatic request, and that this occurs periodically. Johnson ¶¶1145-1152. This is incorrect.

2249. Muoio does not disclose or suggest receiving a *set* of image data from a remote server system in response to a request. In Muoio, a portion relied upon by Dr. Johnson states:

> FIG. 17 is a flow diagram of the processing of an art display module. The art display module overlaps the displaying of an image with retrieving from the art server of the next image to be displayed. The module continually displays the images in the play list by displaying the first image in the play list after the last image is displayed. The art display module is provided with a display list. In step 1701, the module selects the first image in the display list. In step 1702, the module retrieves the selected image from the art server. In steps 1703-1707, the module loops displaying the images in the play list at the specified intervals. In step 1703, the module displays the last retrieved image. In step 1704, the module selects the next image in the display list. In step 1705, the module retrieves the selected image from the

> art server. In step 1705, the modules pauses for the requisite interval or until a user touches the panel. In step 1706, if the user touches the panel, then the module continues at step 1707, else the module loops to step 1703 to select and display the last retrieve image. In step 1707, the function displays the information relating to the current image and then loops to step 1705 to pause. The display of the information corresponds to FIG. 1. In one embodiment, the module may cache the images so that each image of a play list only needs to be retrieved once.

Muoio at 9:47-10:3.

2250. First, as shown above, it is Muoio's art space controllers that performs this process, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2251. Also, as I have explained, the art server is on a local network with the art space controllers and is thus not a "first remote server system," as shown for example in FIG. 6 of Muoio below.

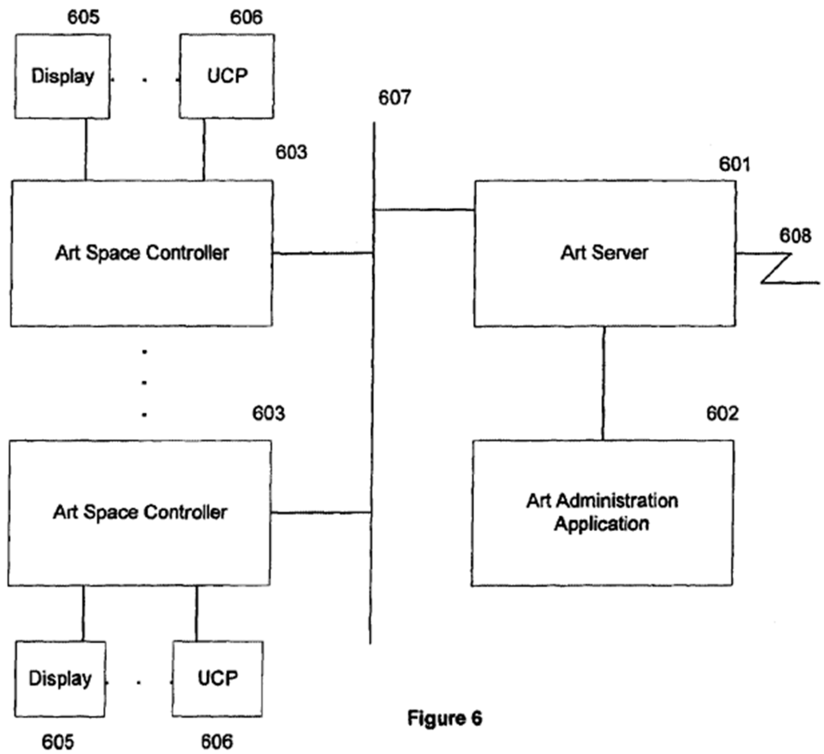


Figure 6

2252. Also, the art server *pushes* play lists to art space controllers independent of any request:

> In step 1802, the module displays the user interface for the user control point device. In step 1803, if the user indicated to assign a new play list the space, then the module continues at step 1804, else the module returns. In step 1804, the module notifies the *art server* to change the play list assignment for the space. **The *art server* then sends out an event to notify the art space controllers that the play list has changed.**

Muoio at 10:7-14 (emphasis added).

2253. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller. Muoio at 9:52-53.

2254. Since Muoio only discloses that separate art space controllers retrieve images after play lists are pushed to the art space controllers, Muoio does not disclose a display device that automatically initiates communications and receives a set of image data in response to a request.

2255. Further confusing Dr. Johnson's positions, Dr. Johnson cites to portions of Muoio that refer to a user being able to set up "queries" that allow the *art server* to download art from the remote mass storage device based on the query, such as a query for art by a particular artist. Johnson ¶¶1148-1149; *see* Muoio, 4:27-41, 5:51-6:5, 8:54-9:25. For instance, *see* FIG. 5 showing an example query:

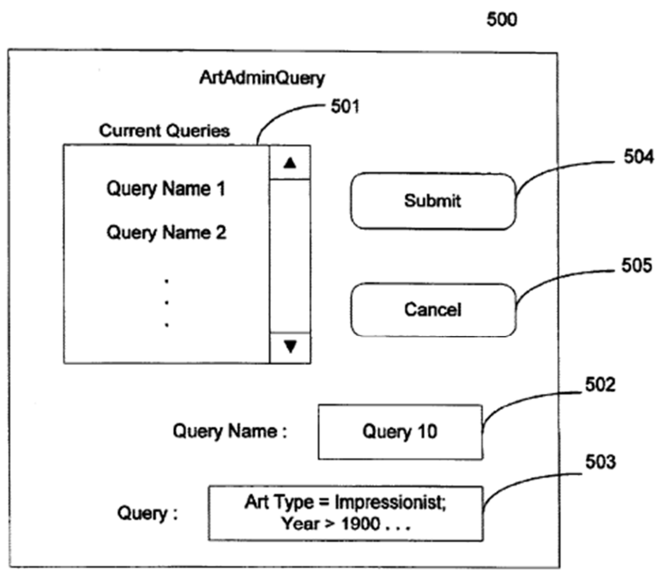


Figure 5

2256. However, these queries are not performed by a display device as required by the claim. Additionally, the Ceiva claims and specification clearly show that requesting images is entirely initiated by the display apparatus to avoid a user having to, e.g., "know how to navigate around the operating system and how to use the program utilized to obtain the data." See, e.g., '573 Patent at 3:32-37. In Muoio, queries require a user to know how to navigate and define queries using syntax average users would not be familiar with, such as "SQL." Muoio at 5:59-65. As such, a POSITA would not have looked to Muoio to solve the problems the Patents-in-Suit sought to address.

2257. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

viii. Claim [1.m] an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system;

2258. For this claim limitation, Dr. Johnson again refers mainly to his analysis with respect to claim 2 of the ’573 Patent. Johnson ¶1360.

2259. Dr. Johnson admits that Muoio does not disclose authentication, but asserts that, because Muoio discloses the art space controllers and the art server, it “would have been obvious to modify Muoio to perform client-server authentication,” based on Elgamal’s or RFC 2246’s disclosures, “e.g., authenticating the server system before storing package data comprising image data and preferences in memory of the frame device.” Johnson ¶¶1188-1195. Dr. Johnson asserts a POSITA would be motivated to implement authentication between the art space controllers and the art server because “[a] POSITA . . . would have been motivated to combine Muoio with the security and device authentication features, including the security handshaking prior to the transfer of data, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and authenticate the devices within Muoio’s client-server (art controller and associated display device—art server system) image distribution system.” Johnson ¶1363.

2260. But, as I explained in Section XIII.B.1, the art server and the art space controllers are within a local network, i.e., a local network in the same building, and do not communicate over the Internet. Muoio clearly describes how the network is set up. First, Muoio’s display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: “The art server is connected to the art space controllers via communications channel 607, which

may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
    - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).
    - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.
- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).
    - This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2261. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

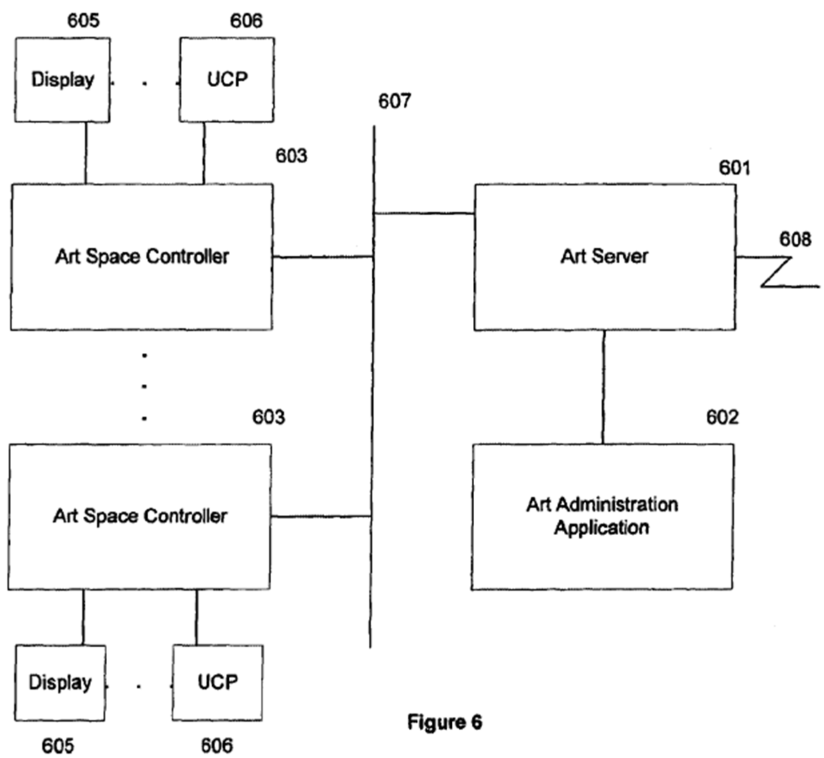


Figure 6

2262. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2263. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error. Dr. Johnson also asserts that a POSITA would be motivated to

combine Muoio and Elgamal or RFC 2246 so that, in communications between Muoio's art space controllers and art server, communications are "prevent[ed] from being intercepted, altered, or otherwise compromised." Johnson ¶¶1197-1202.

2264. This is illogical. Elgamal and RFC 2246 emphasize they are directed to communications between entities over the public Internet. Elgamal at 1:63-2:22; RFC 2246 at 1. While some local networks could benefit from certain security protocols, Muoio's system is a fairly simple local system that has a small art space controller device pull images stored on a larger art server computer that acts as a storage device in a real-time manner (that is, as the art space controller reaches each image in a play list). Muoio at 9:47-10:3. A POSITA would see little need to implement security measures such as encryption and authentication between the art space controllers and the local art server.

2265. Although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Muoio. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶1189-1194, 1361-1362. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[183] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of

[183] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

processor cycles and memory usage."[184] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2266. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2267. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2268. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

[184] *Id.*

2269. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2270. Dr. Johnson states: "The combination of Elgamal with Muoio is a combination of prior art elements according to known methods to yield predictable result." Johnson ¶1200. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Second, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2271. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2272. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ix. Claim [1.n] a software update function configured to obtain an updated version of said onboard software from said server [1.o] and to replace said current version of said onboard software in said memory with said updated version.

2273. For this claim limitation, Dr. Johnson again refers to and reuses his analysis regarding the ’573 Patent, asserting that Muoio could be combined with one Criss or Kottapurath to provide software updates. Johnson ¶¶1365-1369.

2274. I also note that, as Claim 1 of the ’930 Patent also recites authentication, to attempt to reach all claim elements of Claim 1 of the ’930 Patent, Dr. Johnson is combining three or more prior art references together, which a POSITA would recognize starts to become untenable. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

2275. First, I note that the art space controllers and the display devices of Muoio are separate devices, as I explained in Section XIII.B.1. I do agree with Dr. Johnson that Muoio does not disclose any method or process to obtain an update for software.

2276. Dr. Johnson then combines, in the alternative, each of Criss and Kottapurath with Muoio to attempt to meet this claim element. Johnson ¶¶1229-1243. However, it should be also noted that neither Criss nor Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital display devices. I understand that, if a reference is not in the same field of endeavor, it can

only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2277. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Muoio. Criss is related to managing cellular networks, not to the field of consumer home/office display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2278. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since

the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

2279. This claim requires the at least one digital picture frame obtain operating system updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the frame device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit.

2280. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶1232-1233. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

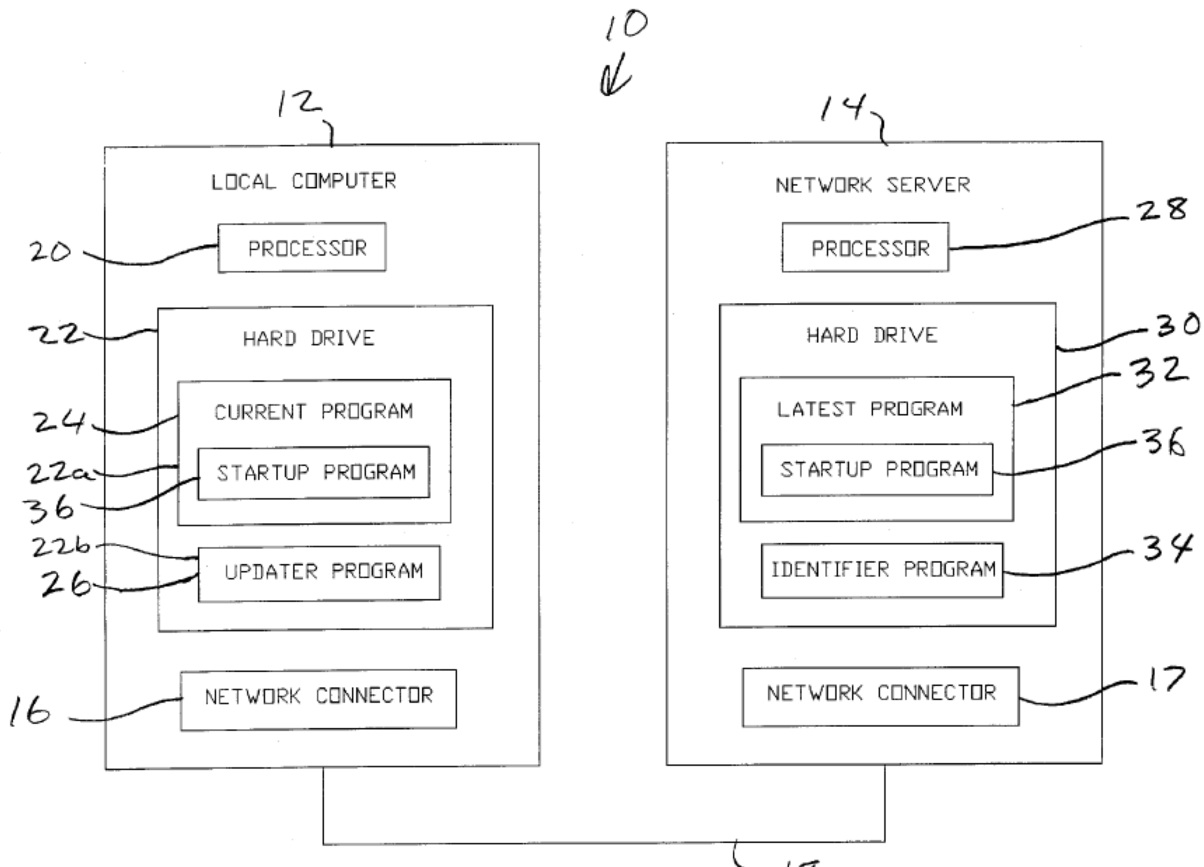


Fig. 1

2281. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

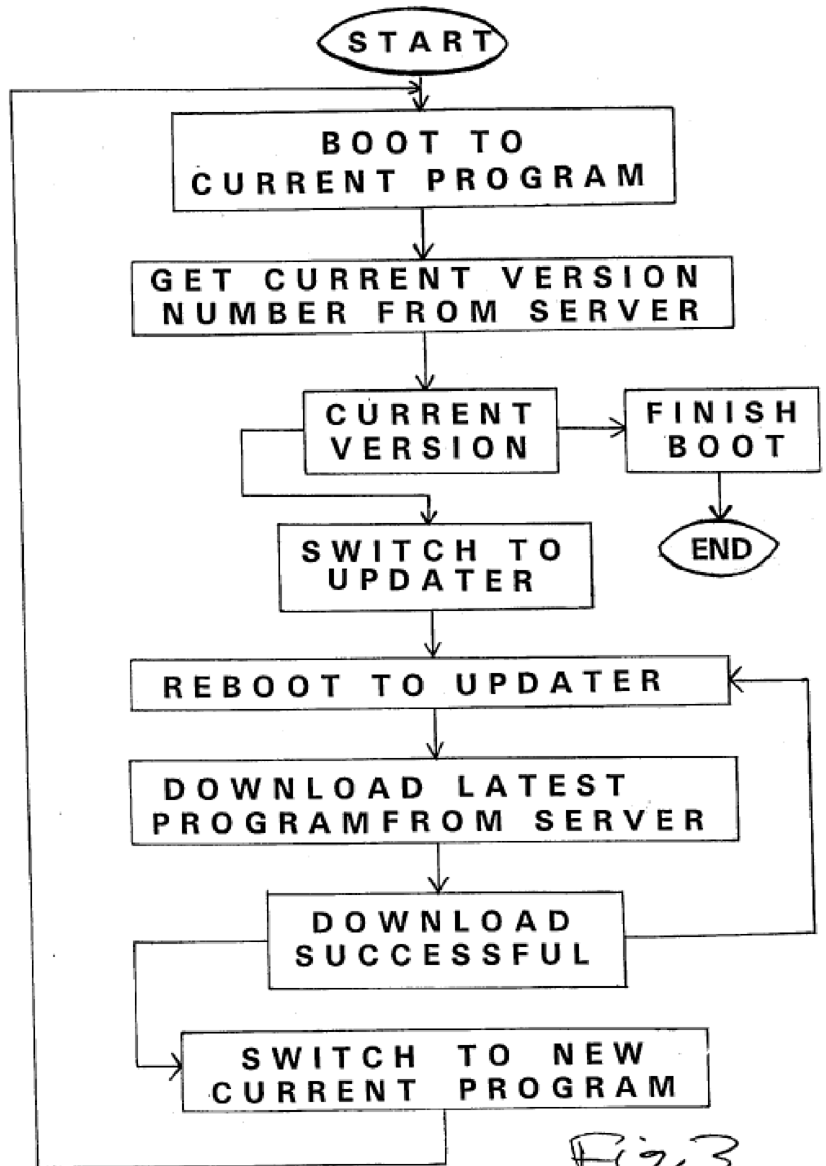


Fig. 3

2282. Dr. Johnson then states: "a POSITA would have been motivated to combine the software update and replacement functions described in Criss or Kottapurath with the client-server system in Muoio to provide art space controller software updates through a central art server system. Moreover, replacing the current version of the operating system software stored in said memory with an updated version is also obvious to try because there are two finite choices for such software updates—incremental patches or a full replacement—and it would have been

obvious to a POSITA to try both." Johnson ¶1234. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's art space controllers specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controllers somehow to obtain software updates from the local art server. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2283. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss or Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Muoio.

2284. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

x. Claim [2.] The digital display apparatus of claim 1, wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system.

2285. Dr. Johnson states: " Muoio in combination with Nishiyama, Elgamal, or RFC 2246, discloses a unique identifier for said digital display apparatus," that "Muoio in combination with Elgamal or RFC 2246, discloses an authentication function configured to authenticate said first remote server system (e.g., the art server system) prior to accepting said set of data from said first remote server system," and generally uses the same arguments as with respect to the unique identifier element of Claim 1 of the '930 Patent. Johnson ¶¶1371-1372.

2286. Dr. Johnson attempts to combine Nishiyama with Muoio. As I explain throughout this report, Dr. Johnson ignores that Muoio and Nishiyama are in entirely different fields. The

USPTO primary classification for Muoio is 345/1.1. Class 345[185] is *Computer Graphics Processing and Selective Visual Display Systems*. Subclass 1.1 is *Plural Display Systems*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[186] The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[187] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

2287. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Muoio, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

2288. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Johnson ¶¶1326-1328. Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

[185] https://www.uspto.gov/web/patents/classification/uspc345/sched345.htm

[186] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

[187] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

2289. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

2290. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶1327. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *see, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier."), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

2291. For Dr. Johnson's combination of Muoio with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Muoio with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

2292. As I have explained, SSL and TLS were both intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[188] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[189] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2293. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2294. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

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[188] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[189] *Id.*

2295. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2296. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2297. Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Also, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2298. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to

cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2299. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xi. Claim [3.] The digital display apparatus of claim 2, wherein said authentication function is further configured to provide device authentication information to said first remote server system prior to obtaining image data from said first remote server system.

2300. Dr. Johnson states: "Elgamal or RFC 2246, discloses an authentication function configured to authenticate said first remote server system (e.g., the art server system) prior to accepting said set of data from said first remote server system," that "Nishiyama, Elgamal, and RFC 2246 further disclose an authentication function further configured to provide client authentication information to the server prior to obtaining any data from the server," and generally uses the same arguments as with respect to the unique identifier element of Claim 1 of the '930 Patent. Johnson ¶¶1380-1381.

2301. Dr. Johnson attempts to combine Nishiyama with Muoio. As I explain throughout this report, Dr. Johnson ignores that Muoio and Nishiyama are in entirely different fields. The USPTO primary classification for Muoio is 345/1.1. Class 345[190] is *Computer Graphics Processing and Selective Visual Display Systems*. Subclass 1.1 is *Plural Display Systems*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[191] The USPTO primary classification for Nishiyama is 725/32. Class 724 is

[190] https://www.uspto.gov/web/patents/classification/uspc345/sched345.htm

[191] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

Interactive Video Distribution Systems.[192] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

2302. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Muoio, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

2303. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Johnson ¶¶1326-1328. Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose

192 https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

2304. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

2305. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶1327. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *see, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier."), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

2306. For Dr. Johnson's combination of Muoio with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Muoio with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

2307. As I have explained, SSL and TLS were both intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop

computers).[193] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[194] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2308. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2309. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2310. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio

[193] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[194] *Id.*

discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2311. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2312. Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Also, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2313. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2314. Finally, Dr. Johnson points to the same portions of the references he alleged taught the unique identifier in claims 1 and 2 of the ’930 Patent and thus that the alleged “unique

identifier" of these references is also the device authentication information in Claim 3 of the '930 Patent. Claim 2, from which Claim 3 depends, already recites "wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system." Therefore, in light of the principles of claim differentiation, Claim 3 must be referring to device authentication information other than the unique identifier, and thus Dr. Johnson has failed to show this element.

2315. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xii. Claim [7.] The digital display apparatus of claim 1, wherein said memory comprises a connection timing parameter that indicates a timing interval for said digital display apparatus to automatically initiate periodic connections with said first remote server system.

2316. Dr. Johnson asserts that Muoio alone discloses this claim because Muoio discloses that the art space controller retrieves play list images from the art server. Johnson ¶¶1396-99.

2317. But, as I explained in Section XIII.B.1.iv, it is Muoio's art space controllers that performs this process of retrieving images, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2318. Additionally, as I explained in Section XIII.B.1.i, the art server in Muoio is on a local network with the art space controller, and thus the art space controller is not a "first remote server system."

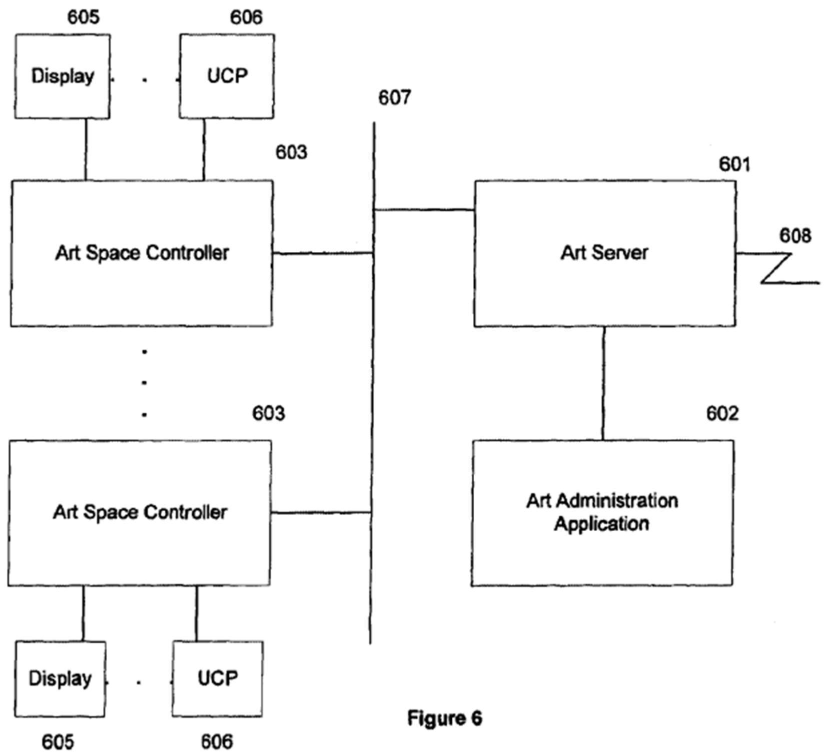

Figure 6

2319. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xiii. Claim [8.] The digital display apparatus of claim 1, wherein said memory comprises an image display parameter comprising a timing interval for periodically selecting an image data file from said memory for rendering on said display region.

2320. Claim 8 is valid for at least all the reasons I described with respect to Claim 1, and because, again, Muoio does not disclose that the display device includes a memory comprising an image display parameter comprising a timing interval for periodically selecting an image data file from said memory for rendering on said display region. The separate art space controllers handle play lists for display.

2321. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

5. Claims 4-6, and 15 of the ’930 Patent are valid in view of Muoio in combination with Hoyle, and one of Elgamal or RFC 2246, and one of Criss or Kottapurath, alone or further in combination with one of Jacklin or Stylistic Tablet, alone or further in combination with Nishiyama

2322. I note that, since Claim 15 is dependent from Claim 11, Claim 15 includes all the elements of Claim 11.

i. Claim [4.] The digital display apparatus of claim 1, wherein said onboard software further comprises an initialization function configured to prompt said first remote server system to associate a record with said digital display apparatus.

2323. Dr. Johnson admits that Muoio does not disclose the claimed initialization function configured to prompt said first remote server system to associate a record with said digital display apparatus, but asserts it would be obvious to do so based on Hoyle. Johnson ¶1387. Dr. Johnson states: “it would have been obvious to a POSITA . . . to include a function configured to prompt said first remote server system to associate a record with said digital display apparatus, such as that found in Hoyle, to allow the server to track and perform specific operations for individual devices and/or users.” Johnson ¶1387.

2324. Dr. Johnson states that “Hoyle discloses client and user registration with a targeted advertisement display system.” Johnson ¶1388. Dr. Johnson cites portions of Hoyle that state:

> Registration allows for identification and maintenance of the specific installation by the computer from which the user is working. Registration also identifies and captures data about the user reflecting information including user identity, computing environment and usage, and user demographic profile.

Hoyle at 33:55-62.

2325. Dr. Johnson also alleges the following concerning Hoyle:

> Hoyle also discloses that the registration process includes creation of a user profile that includes “one or more user data sets and user links” as well as “other application set up and preference information.” Id. at 8:28-33. “The user profile is accessed by client software application 10 using a unique identifier for the user which . . . can be obtained via login onto software application 10.” Id. at 12:52-55.

> These profiles are stored "on a server connected to the network," such that, "when a user runs the first program module, it identifies the user and connects to the server to access that user's profile and library, with the profile being used to specify that individual's user-selected links to be displayed in the first region [of the graphical user interface]." Id. at 5:50-56; see also id. at 12:50-52 ("a user profile []is stored in the user database 46."). Johnson ¶1390.

2326. Dr. Johnson then abruptly concludes:

> A POSITA would have recognized the user profile creation described in Hoyle as an initialization function that prompts the remote servers to associate records (user profiles) with the respective apparatuses. In my opinion, a POSITA would have recognized that this process could similarly be used to associate a record with a digital display apparatus (i.e., the combined art space controller and display device) of Muoio to allow the server system to track and perform specific operations for the individual apparatus and/or user.

2327. First, I agree that Muoio does not disclose an account initialization function. That said, Dr. Johnson's reasons for modifying Muoio's system to include a profile creation process is unfounded and does not provide any actual motivation to modify Muoio's system. In Muoio's system, the art server, via its local network connection to the art space controllers, already can perform specific operations without needing some additional process that would prompt the art server to associate a record with an art space controller, such as pushing play lists to art space controllers over the local connection. Muoio at 10:7-14. Dr. Johnson provides no reasons why Muoio's system would benefit from a combination with Hoyle.

2328. Also, the '930 Patent provides that:

> The initialization process begins at step 800 when the frame device is connected to a power Source and a communication medium such as a telephone line or network connection. The frame device may be configured to automatically connect via a wireless connection or the user may manually couple it to a power source and communication medium.
>
> . . .
>
> At step 805, the data repository is analyzed to determine whether there is a record for the frame device initiating the connection. If a record for the frame device is not located, step 807 executes and an image prompting the user to create a picture box account associated with that frame device is displayed to the user.

. . .

> Once the picture box is obtained, step 813 executes, at step 813 the behavior characteristics of the frame device is determined. The behavior characteristics may be established by default or customized according to the user's preferences. When the behavior characteristics are determined, step 815 executes. At step 815, the invention contemplates loading the behavior characteristics into the data repository for use by the frame device.

'930 Patent at 23:59-65, 24:9-16, 24:39-46.

2329. Therefore, the initialization function as described, for example, in this portion of the '930 Patent refers to an automatic initialization process carried out by the display apparatus to ensure the user has a record associated with the remote server system, which is not disclosed in Hoyle. Hoyle specifies that it creates and stores a user profile "when a user first accesses client application 10." Hoyle at 11:65-12:44.

2330. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ii. Claim [5.] The digital display apparatus of claim 1, wherein said digital display apparatus is configured to display an account initialization message.

2331. Dr. Johnson admits that Muoio does not disclose the displaying an account initialization message, but asserts it would be obvious to do so based on Hoyle. Johnson ¶1387.

2332. I first note that I agree with Dr. Johnson that Muoio does not expressly disclose this claim limitation. I next note that Dr. Johnson asserts that Hoyle discloses that "a targeted advertisement display system may be configured to display a message asking of the user would like to set up a new account." Johnson ¶1393 (citing Hoyle at 26:49-27).

2333. Even if one were to agree with Dr. Johnson that a POSITA *could* make this combination, Dr. Johnson provides no reason why a POSITA *would* modify Muoio. All Dr. Johnson points to is the fact that Hoyle discloses displaying an account initialization message

when a user creates a new account. However, Dr. Johnson does not provide any reason why this would benefit Muoio. In fact, somehow having an art space controller in Muoio display an account initialization message makes no sense in the context of Muoio.

2334. As I explained in Section XIII.B.2.v, Muoio provides an open system in which art on any display device can be changed by any user. Although Dr. Johnson attempts to make it appear that user accounts would be needed in Muoio, such as because it may be desirable to lock people such as guests or visitors out of the system so that they cannot use the user interface to control play lists, Muoio includes no disclosure or suggestion of locking people out of the interface. Rather, since Muoio shows that a "guest room" can also include a display, art space controller, and UPC, then it would seem guests would also be encouraged to use the system. Muoio at 3:44-48. In fact, the Muoio artwork system was part of a project to apply the Muoio artwork system in Bill Gates' house. Evidence shows that visitors to Bill Gates' house had free reign to change the artwork without having to be authenticated.[195]

2335. Also, it would also be extremely user-unfriendly to require someone to log in to an account every time they tried to use one of the user control points. Further, there is no disclosure in Muoio that display devices or art space controllers are specific to users. Rather, they are specific

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[195] https://www.eteknix.com/bill-gates-mansion-has-some-secrets/ ("On arrival at the Gates household, you'll be handed a little pin. his pin interacts with sensors built into the house, in turn, it then tracks your movement throughout the entire complex." "Many of the paintings in the house are digital, he has roughly $80,000 dollars of displays that then connect back to a $150,000 server farm. The server farm then has a nearly unlimited supply of artwork for ***you*** to switch to" (emphasis added); https://www.archute.com/bill-gates-house/ ("Unlike most houses that display actual paintings or art, Bill Gates's house features computer screens on the walls that display art and paintings. It is estimated that these wall screens are worth at least $80,000, and the art is stored on devices worth approximately $150,000. ***As a guest***, you can display your favorite pieces on these screens." Emphasis added)); https://economictimes.indiatimes.com/nation-world/peek-inside-bill-gates-124-million-mansion-xanadu-2-0/rotational-artwork/slideshow/56019674.cms ("***Anyone*** can make the screens display their favorite paintings or photographs, which are stored on devices worth $150,000.") (emphasis added).

to rooms. Thus, prompting users to create an account by displaying an account initialization message in Muoio is completely illogical.

2336. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iii. Claim [6.] The digital display apparatus of claim 5, wherein said account initialization message prompts a user to create an account with said first remote server system.

2337. Dr. Johnson again combines Muoio with Hoyle for this claim. Johnson ¶1395. His position is deficient for the reasons I described regarding Claim 5 immediately above.

2338. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iv. Claim [11.pre] A digital display apparatus having an integrated housing, said integrated housing comprising

2339. Dr. Johnson simply refers back to his discussion regarding Claim 1. Johnson ¶¶1417-1418. Dr. Johnson asserts that Muoio has a display apparatus with an integrated housing because Muoio discloses display devices 605. Johnson ¶¶1287-1289.

2340. But Dr. Johnson takes this claim element out of context and ignores that it is the display apparatus having an integrated housing that includes the other components and performs other functions of Claim 1 that the display device 605 of Muoio does not include or perform. As shown in FIG. 6 of Muoio below, the art space controller 603, which Dr. Johnson alleges performs most of the claimed functions, is a separate device from the display device 605 that Johnson asserts is a display device having an integrated housing. The display devices 605 are essentially "dumb" monitor or television devices that have content displayed on them as via the art space controllers 603 and the user control points 606. Muoio at 6:27-29.

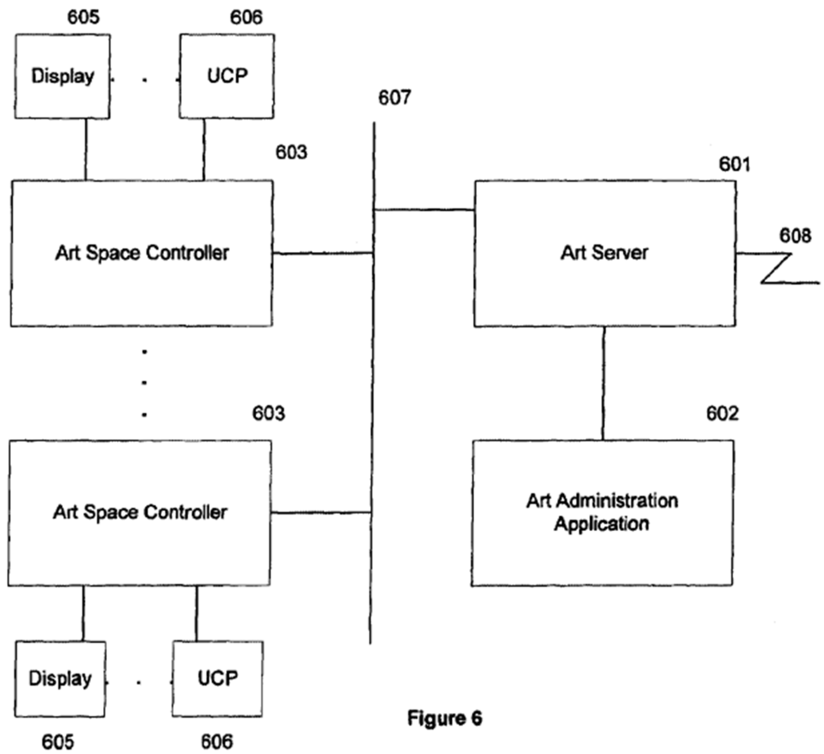
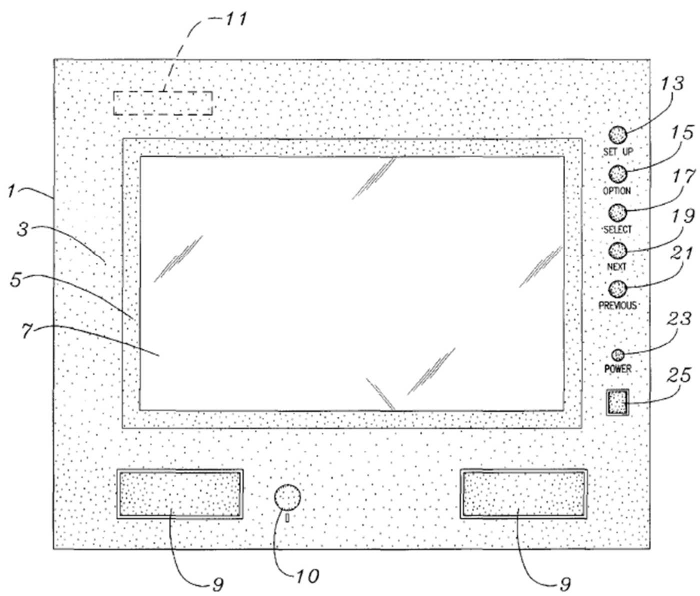


Figure 6

2341. Apparently recognizing Muoio's deficiencies, Dr. Johnson states: "[t]o the extent Muoio does not expressly disclose a digital display apparatus having an integrated housing in the combination of an art space controller and an associated digital frame display, it would have been obvious to a POSITA, as of the earliest filing date of the '930 Patent, that the art space controller and associated digital frame display could be implemented in a single apparatus, such as Jacklin's digital picture frame or Stylistic Tablet." Johnson ¶1290. As I explained in Section XII.C, Jacklin is a digital picture frame, shown for example below:

Fig. 1



2342. As I explained in Section XII.M, Stylistic Tablet is a tablet computer device, shown for example below.

2343. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> Moreover, a POSITA, as of the earliest filing date for the '930 Patent, would have been motivated to combine Jacklin or Stylistic Tablet with Muoio's client-server

> system to provide a digital art display frame to simplify the architecture of the art distribution system by implementing the art space controller and associated digital frame display into a single apparatus, such as Jacklin's digital picture frame or Stylistic Tablet. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device that displays the images distributed by Muoio's art distribution system. The combination is a simple substitution of one known element for another to obtain predictable results.

Johnson ¶1294.

2344. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2345. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio, but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2346. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead,

Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2347. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2348. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to

cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2349. For at least the reasons described in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

v. Claim [11.b] a memory in an inside of said integrated housing, [11.c] said memory comprising a plurality of image data files,

2350. Dr. Johnson simply refers back to his discussion regarding Claim 1. Johnson ¶¶1417-1418. Muoio does not disclose its display devices 605 include a memory, much less a memory that includes a plurality of image data files. Dr. Johnson relies on his alleged combination of Muoio with one of Jacklin or Stylistic Tablet, asserting that, if one were to replace the display device 605 in Muoio with Jacklin's digital picture frame or the Stylistic Tablet, then the display device in Muoio would have a memory that stores image files. Johnson ¶¶1310-1311.

2351. But, as I explained above, a POSITA would not be motivated to combine Muoio with Jacklin or Stylistic Tablet, and Dr. Johnson has provided no reasons why a POISTA would be motivated to do so.

2352. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

vi. Claim [11.d] security information comprising authentication information for a first remote server system

2353. Dr. Johnson simply refers back to his discussion regarding Claim 1. Johnson ¶1422.

2354. Dr. Johnson admits that Muoio does not disclose authentication at all, much less storing security information in memory of a display apparatus. Johnson ¶1313.

2355. Dr. Johnson also admits that Muoio does not disclose authentication, but asserts that Muoio could be combined with one of Elgamal (SSL) or RFC 2246 (TLS) to provide authentication in Muoio's system between the art space controllers and the art server. Johnson

¶1315-1321. Dr. Johnson asserts a POSITA would be motivated to implement authentication between the art space controllers and the art server because "[a] POSITA . . . would have been motivated to combine Muoio with the security and device authentication features, including the security handshaking and use of server certificates, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and authenticate the devices within Muoio's client-server (art controller and associated display device—art server system) image distribution system." Johnson ¶1320.

2356. But, as I explained in Section XIII.B.1, the art server and the art space controllers are within a local network, i.e., a local network in the same building, and do not communicate over the Internet. Thus, Muoio does not disclose a "first ***remote*** server system," as required by this claim element. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
    - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the***

Internet) to an art mass storage device." Muoio at 6:14-22 (emphasis added).

- This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.

- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).

  - This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2357. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

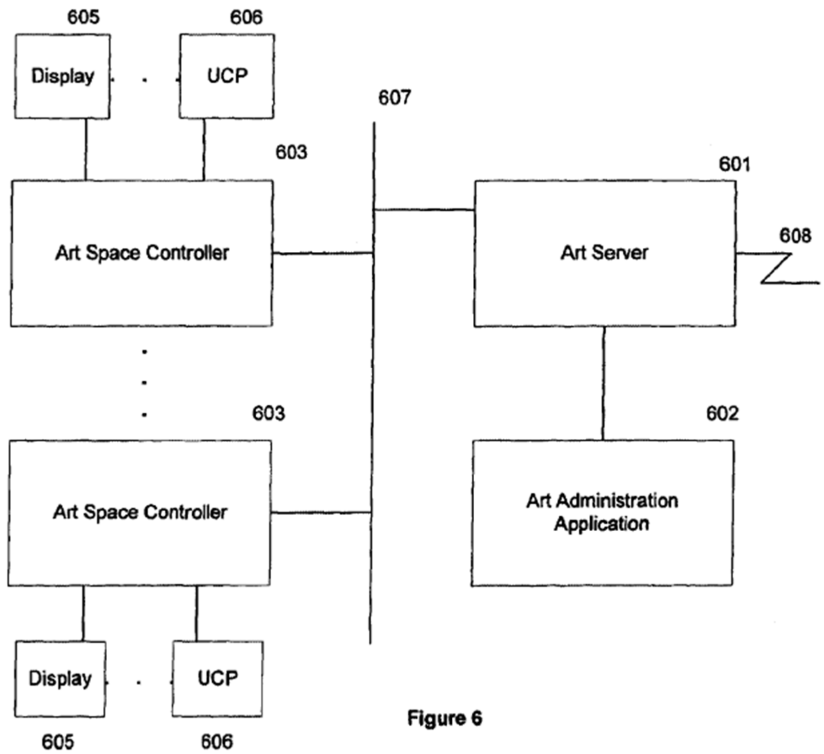


Figure 6

2358. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2359. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error. Dr. Johnson also asserts that a POSITA would be motivated to combine Muoio and Elgamal or RFC 2246 "to prevent malicious activities by ensuring that the apparatus is communicating, and receiving data from, the correct server." Johnson ¶1320.

2360. This is illogical. Elgamal and RFC 2246 emphasize they are directed to communications between entities over the public Internet. Elgamal at 1:63-2:22; RFC 2246 at 1. While some local networks could benefit from certain security protocols, Muoio's system is a

fairly simple local system that has a small art space controller device pull images stored on a larger art server computer that acts as a storage device in a real-time manner (that is, as the art space controller reaches each image in a play list). Muoio at 9:47-10:3. A POSITA would see little need to implement security measures such as encryption and authentication between the art space controllers and the local art server.

2361. Although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Muoio. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶1316-1319. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[196] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[197] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2362. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates.

[196] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[197] *Id.*

Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2363. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2364. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2365. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2366. Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Also, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2367. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2368. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

2369. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

vii. Claim [11.e] and a unique identifier for said digital display apparatus,

2370. Dr. Johnson simply refers back to his discussion regarding Claim 1. Johnson ¶1423.

2371. Dr. Johnson admits that Muoio does not disclose or suggest storing in memory of a display apparatus a unique identifier for said digital display apparatus. Johnson ¶1323.

2372. Dr. Johnson then attempts to combine Nishiyama with Muoio. As I explain throughout this report, Dr. Johnson ignores that Muoio and Nishiyama are in entirely different

fields. The USPTO primary classification for Muoio is 345/1.1. Class 345[198] is *Computer Graphics Processing and Selective Visual Display Systems*. Subclass 1.1 is *Plural Display Systems*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[199] The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[200] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

2373. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Muoio, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

2374. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Johnson ¶1326-1328. Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

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[198] https://www.uspto.gov/web/patents/classification/uspc345/sched345.htm

[199] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

[200] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

2375. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

2376. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶1327. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *see, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier."), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

2377. For Dr. Johnson's combination of Muoio with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Muoio with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

2378. As I have explained, SSL and TLS were both intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[201] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[202] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2379. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2380. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

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[201] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[202] *Id.*

2381. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2382. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2383. Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Also, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2384. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to

cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2385. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

viii. Claim [11.f] and onboard software;

2386. Dr. Johnson simply refers back to his discussion regarding Claim 1. Johnson ¶1424.

2387. Dr. Johnson, without citing any evidence, asserts that it would be obvious for the art space controllers of Muoio (which again are not digital display apparatuses) to store a current version of onboard software because the art space controllers have software. Dr. Johnson states:

> Furthermore, it would have been obvious to a POSITA as of the earliest filing date of the '930 Patent to store a current version of the operating system or onboard software of the art space controller to allow the system to work properly. It was well known to a POSITA that software, such as operating system software or other onboard may have different versions that are released over time as the software is updated. A version currently stored in the art space controller is the current version. A POSITA would have also recognized that the current version may be the latest version, and a POSITA would have been motivated to store the latest version of the onboard software in the art space controller to provide it with the latest feature set and bug fixes.

Johnson ¶1331.

2388. Dr. Johnson thus assumes that Muoio is meant to support software updates, which are not disclosed in Muoio. Dr. Johnson then further assumes that Muoio could facilitate software updates by storing a version number, which is also not disclosed in Muoio. In addition to basing assumptions upon assumptions, Dr. Johnson also ignores other ways software can be updated including:

a. Simply installing the latest version over whatever is already on the device, regardless of what version it is; and

b. Simply using the date stamp of the file and updating if something with a later date stamp is available.

2389. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

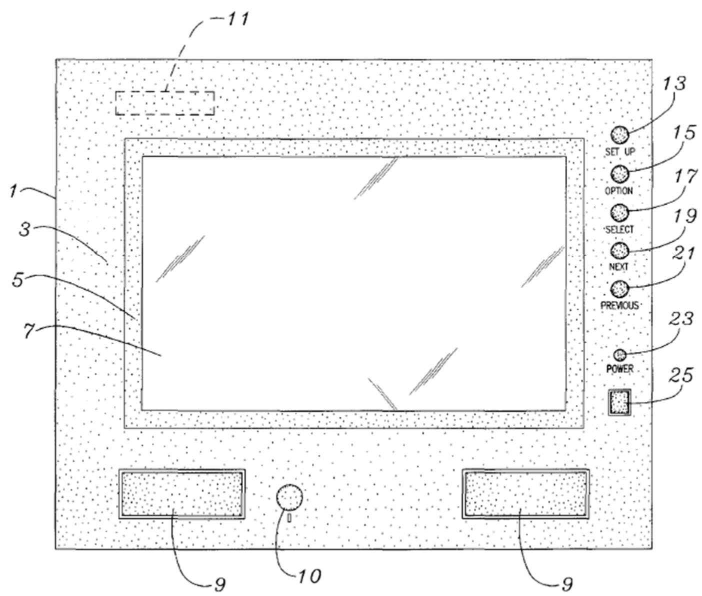
ix. Claim [11.g] a processor configured to control the display of image data from said plurality of image data files in said image display region in accordance with said onboard software in said inside of said integrated housing; [11.h] communication circuitry configured to engage a network medium in said inside of said integrated housing under the control of said processor; [11.i] wherein said onboard software comprises: an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region

2390. Dr. Johnson simply refers back to his discussion regarding Claim 1. Johnson ¶¶1425-1427.

2391. Dr. Johnson asserts that Muoio alone or combination with Jacklin or Stylistic Tablet discloses these elements. Johnson ¶¶1333-1352. However, as I have explained, the art space controller that Dr. Johnson relies on is a separate device from the display device in Muoio, and Muoio discloses nothing regarding the structure of the display device 605. Thus, Muoio does not have a display device with a processor configured to control the display of image data from said plurality of image data files in accordance with said onboard software in said inside of said integrated housing, nor communication circuitry under the control of said processor, nor onboard software that comprises an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region.

2392. Dr. Johnson again asserts that Jacklin or Stylistic Tablet could be used to provide display devices with explicitly disclosed memory and processors, but, again, Dr. Johnson provides no compelling motivations to combine Muoio with either Jacklin or Stylistic Tablet. As I explained in Section XII.C, Jacklin is a digital picture frame, shown for example below:

Fig. 1



2393. As I explained in Section XII.M, Stylistic Tablet is a tablet computer device, shown for example below.

2394. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> A POSITA, as of the earliest filing date for the ’573 Patent, would have been motivated to combine Jacklin’s digital picture frame or Stylistic Tablet with

> Muoio's client-server system to provide a digital art display frame. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device containing the art display that displays the images distributed by Muoio's art distribution system, and its associated art space controller. A POSITA would have been motivated to make this combination based on the teachings of Jacklin and/or Stylistic Tablet of a frame device containing a display and a controller for controlling the display of images on the display. *See, e.g.*, Jacklin at 4:10-23 ("electronic apparatus for displaying images" includes a CPU and "means of . . . displaying each of said plurality of bits of video and audio data"), FIG. 1; Stylistic 1000 RF Overview ("The Stylistic 1000 RF is powered by a 100 megahertz (MHz) 486 processor" and includes an "8-inch LCD[]"). The combination would have involved combining prior art elements according to known methods to yield predictable results, e.g., combining Muoio's art space controller and digital display device into a frame device in the same manner in which Jacklin and/or Stylistic Tablet each teach a frame device having a controller and display.

Johnson ¶1106.

2395. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2396. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio, but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2397. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes

"a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead, Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2398. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2399. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would

discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2400. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

x. Claim [11.j] based on a value of said image display parameter; and

2401. In paragraph 1430 of his report, Dr. Johnson states: "See Muoio at 6:42-45 ('Each play list may also have to a user-specified time associated with it that indicates the length of time each image in the play list is to be displayed')."

2402. The first issue a POSITA would note is that nothing in Muoio meets the claim limitation. The full claim limitation is "an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region based on a value of said image display parameter."

2403. Nothing in Muoio even suggest that image data is obtained based on the length of time each image in the play list is displayed. In fact, Muoio is quite clear that the length of item is optional stating "each play list ***may also*** have…" A POSITA would understand that this does not disclose obtaining image data from said plurality of image data files…based on a value of said image display parameter.

2404. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xi. Claim [11.k] a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, [11.l] said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications [11.m] and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files

2405. Dr. Johnson simply refers back to his discussion regarding Claim 1. Johnson ¶¶1433-1435.

2406. For these claim limitations, Dr. Johnson refers back to his discussion of claims 2 of the '573 Patent. Johnson ¶¶1353-1359.

2407. Dr. Johnson asserts that Muoio discloses these elements, asserting that the description in Muoio, such as at 9:47-10:3, shows relaying image data in response to an automatic request, and that this occurs periodically. Johnson ¶¶1145-1152. This is incorrect.

2408. Muoio does not disclose or suggest relaying image data to display devices in response to display devices automatically initiating communications with a server and issuing a request for image data. In Muoio, a portion relied upon by Dr. Johnson states:

> FIG. 17 is a flow diagram of the processing of an art display module. The art display module overlaps the displaying of an image with retrieving from the art server of the next image to be displayed. The module continually displays the images in the play list by displaying the first image in the play list after the last image is displayed. The art display module is provided with a display list. In step 1701, the module selects the first image in the display list. In step 1702, the module retrieves the selected image from the art server. In steps 1703-1707, the module loops displaying the images in the play list at the specified intervals. In step 1703, the module displays the last retrieved image. In step 1704, the module selects the next image in the display list. In step 1705, the module retrieves the selected image from the art server. In step 1705, the modules pauses for the requisite interval or until a user touches the panel. In step 1706, if the user touches the panel, then the module continues at step 1707, else the module loops to step 1703 to select and display the last retrieve image. In step 1707, the function displays the information relating to the current image and then loops to step 1705 to pause. The display of the information corresponds to FIG. 1. In one embodiment, the module may cache the images so that each image of a play list only needs to be retrieved once.

Muoio at 9:47-10:3.

2409. First, as shown above, it is Muoio's art space controllers that performs this process, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2410. Also, as I have explained, the art server is on a local network with the art space controllers and is thus not a "first remote server system," as shown for example in FIG. 6 of Muoio below.

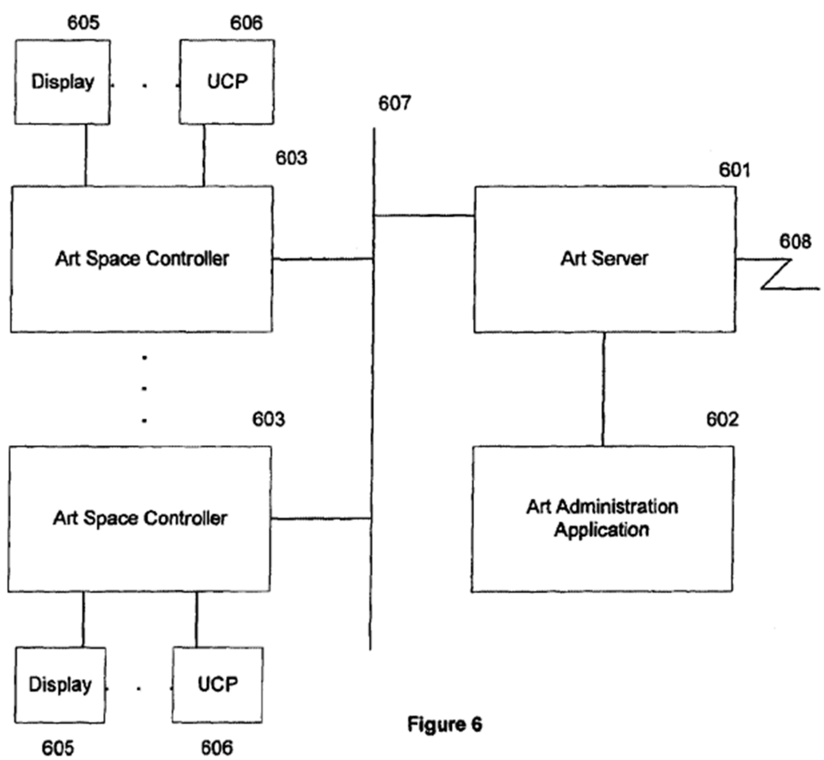


Figure 6

2411. Also, the art server *pushes* play lists to art space controllers independent of any request:

> In step 1802, the module displays the user interface for the user control point device. In step 1803, if the user indicated to assign a new play list the space, then

> the module continues at step 1804, else the module returns. In step 1804, the module notifies the *art server* to change the play list assignment for the space. **The *art server* then sends out an event to notify the art space controllers that the play list has changed.**

Muoio at 10:7-14 (emphasis added).

2412. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller, as required in the claims. Muoio at 9:52-53.

2413. Since Muoio only discloses that separate art space controllers retrieve images after play lists are pushed to the art space controllers, Muoio does not disclose a display device that automatically initiates communications and issues a request for both image data nor a server system that periodically relays image data in response to each request.

2414. Further confusing Dr. Johnson's positions, Dr. Johnson cites to portions of Muoio that refer to a user being able to set up "queries" that allow the *art server* to download art from the remote mass storage device based on the query, such as a query for art by a particular artist. Johnson ¶¶1148-1149; *see* Muoio, 4:27-41, 5:51-6:5, 8:54-9:25. For instance, see FIG. 5 showing an example query:

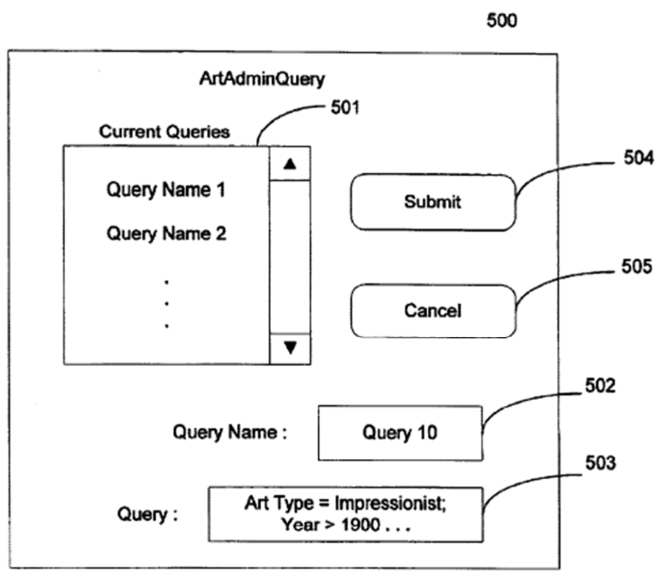


Figure 5

2415. However, these queries are not performed by a display device as required by the claim. Additionally, the Ceiva claims and specification clearly show that requesting images is entirely initiated by the display apparatus to avoid a user having to, e.g., "know how to navigate around the operating system and how to use the program utilized to obtain the data." See, e.g., '573 Patent at 3:32-37. In Muoio, queries require a user to know how to navigate and define queries using syntax average users would not be familiar with, such as "SQL." Muoio at 5:59-65. As such, a POSITA would not have looked to Muoio to solve the problems the Patents-in-Suit sought to address.

2416. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xii. Claim [11.n] an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system;

2417. Dr. Johnson simply refers back to his discussion regarding Claim 1. Johnson ¶1436.

2418. For this claim limitation, Dr. Johnson again refers mainly to his analysis with respect to claim 2 of the '573 Patent. Johnson ¶1360.

2419. Dr. Johnson admits that Muoio does not disclose authentication, but asserts that, because Muoio discloses the art space controllers and the art server, it "would have been obvious to modify Muoio to perform client-server authentication," based on Elgamal's or RFC 2246's disclosures, "e.g., authenticating the server system before storing package data comprising image data and preferences in memory of the frame device." Johnson ¶¶1188-1195. Dr. Johnson asserts a POSITA would be motivated to implement authentication between the art space controllers and the art server because "[a] POSITA . . . would have been motivated to combine Muoio with the security and device authentication features, including the security handshaking prior to the transfer of data, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and authenticate the devices within Muoio's client-server (art controller and associated display device—art server system) image distribution system." Johnson ¶1363.

2420. But, as I explained in Section XIII.B.1, the art server and the art space controllers are within a local network, i.e., a local network in the same building, and do not communicate over the Internet. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over

a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).

- This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.

- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).

  - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.

- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).

  - This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2421. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608

that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

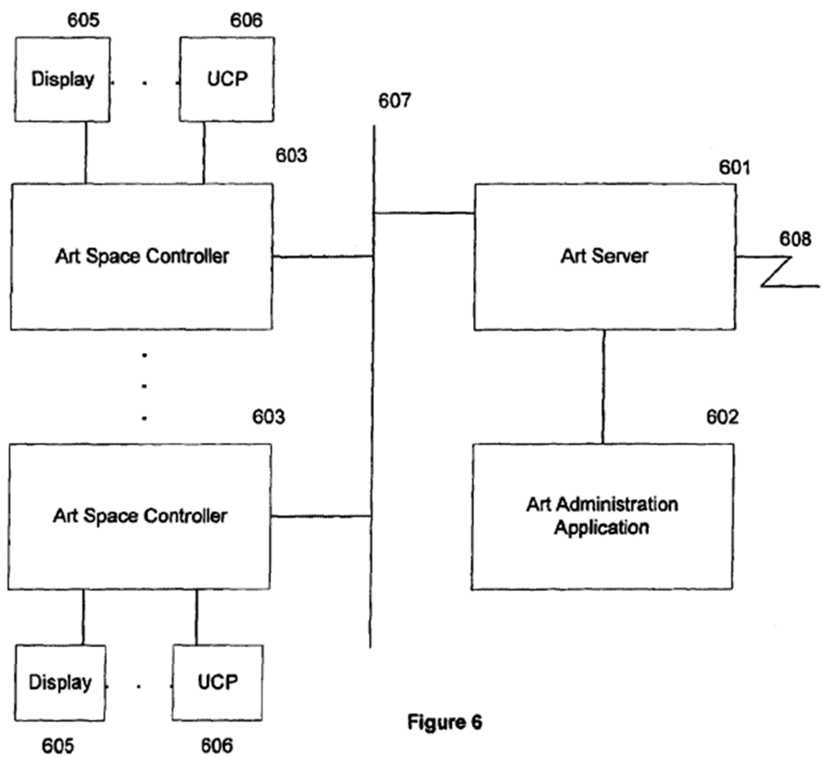


Figure 6

2422. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2423. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error. Dr. Johnson also asserts that a POSITA would be motivated to combine Muoio and Elgamal or RFC 2246 so that, in communications between Muoio's art space controllers and art server, communications are "prevent[ed] from being intercepted, altered, or otherwise compromised." Johnson ¶¶1197-1202.

2424. This is illogical. Elgamal and RFC 2246 emphasize they are directed to communications between entities over the public Internet. Elgamal at 1:63-2:22; RFC 2246 at 1. While some local networks could benefit from certain security protocols, Muoio's system is a fairly simple local system that has a small art space controller device pull images stored on a larger art server computer that acts as a storage device in a real-time manner (that is, as the art space controller reaches each image in a play list). Muoio at 9:47-10:3. A POSITA would see little need to implement security measures such as encryption and authentication between the art space controllers and the local art server.

2425. Although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Muoio. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶1189-1194, 1361-1362. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[203] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[204] Given those challenges still existed in 2004, if Muoio

[203] https://www.embedded.com/implementing-ssl-on-8-bit-micros/
[204] *Id.*

(filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2426. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2427. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2428. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2429. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes

computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2430. Dr. Johnson states: "The combination of Elgamal with Muoio is a combination of prior art elements according to known methods to yield predictable result." Johnson ¶1200. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Second, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2431. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2432. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xiii. Claim [11.o] a software update function configured to obtain an updated version of said onboard software from said server and [11.p] to replace said current version of said onboard software in said memory with said updated version

2433. Dr. Johnson simply refers back to his discussion regarding Claim 1. Johnson ¶¶1437-1438.

2434. For this claim limitation, Dr. Johnson again refers to and reuses his analysis regarding the ’573 Patent, asserting that Muoio could be combined with one Criss or Kottapurath to provide software updates. Johnson ¶¶1365-1369.

2435. I also note that, as Claim 1 of the ’930 Patent also recites authentication, to attempt to reach all claim elements of Claim 1 of the ’930 Patent, Dr. Johnson is combining three or more prior art references together, which a POSITA would recognize starts to become untenable. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

2436. First, I note that the art space controllers and the display devices of Muoio are separate devices, as I explained in Section XIII.B.1. I do agree with Dr. Johnson that Muoio does not disclose any method or process to obtain an update for software.

2437. Dr. Johnson then combines, in the alternative, each of Criss and Kottapurath with Muoio to attempt to meet this claim element. Johnson ¶¶1229-1243. However, it should be also

noted that neither Criss nor Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2438. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Muoio. Criss is related to managing cellular networks, not to the field of consumer home/office display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2439. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different

version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

2440. This claim requires the at least one digital picture frame obtain operating system updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the frame device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit.

2441. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶1232-1233. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the

device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

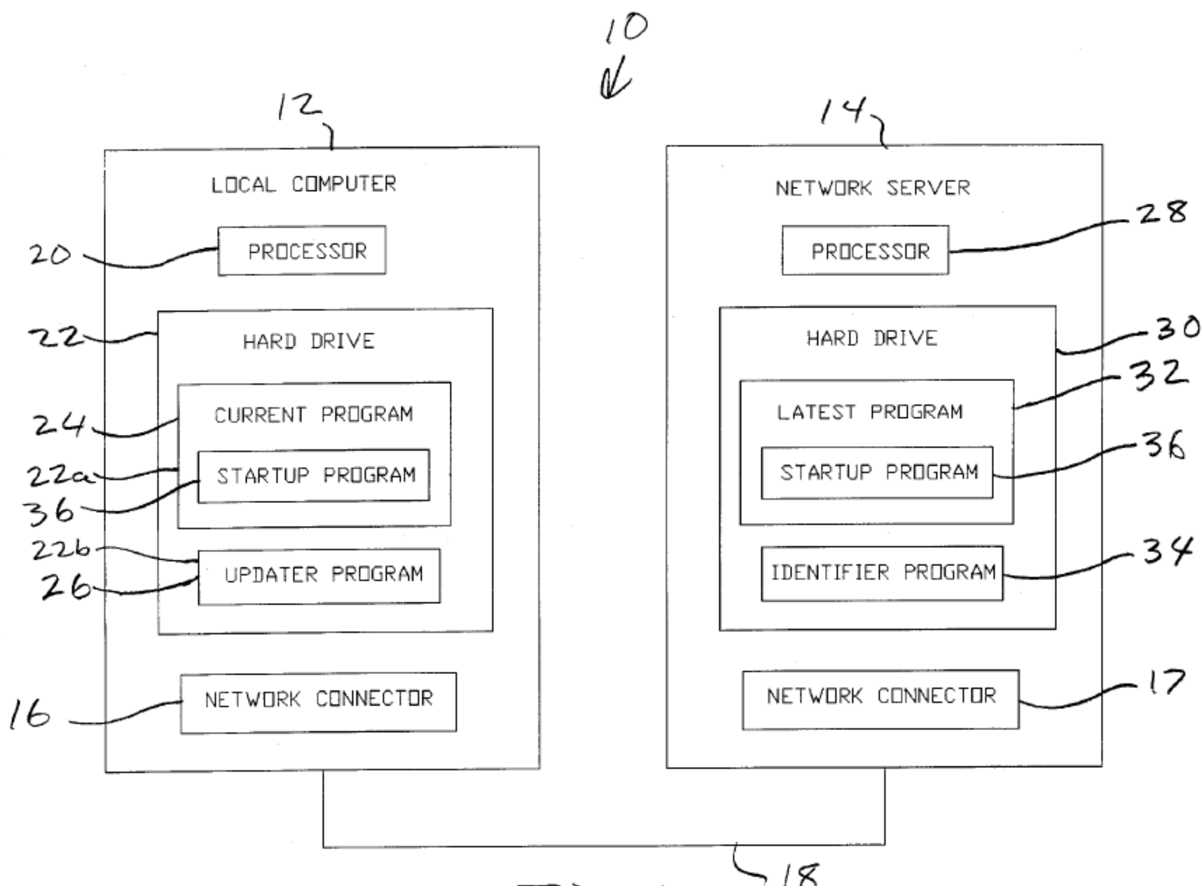


Fig. 1

2442. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

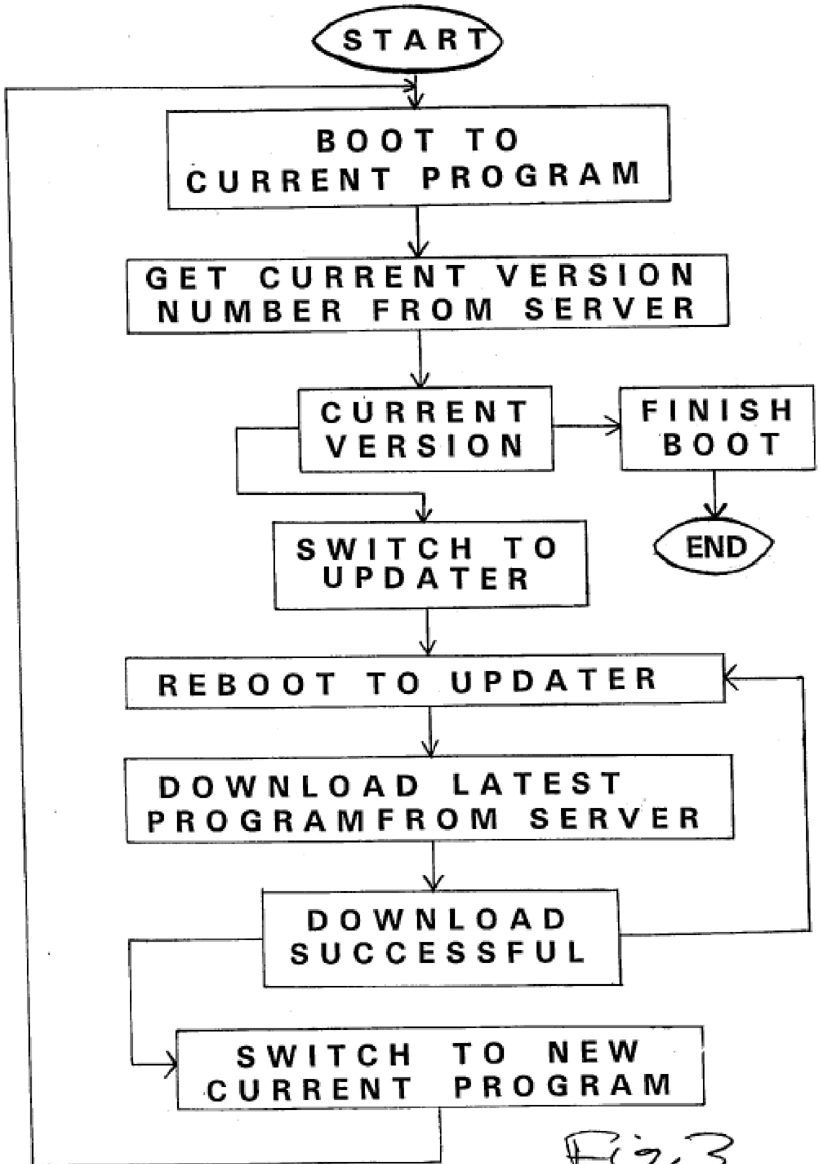


Fig. 3

2443. Dr. Johnson then states: "a POSITA would have been motivated to combine the software update and replacement functions described in Criss or Kottapurath with the client-server system in Muoio to provide art space controller software updates through a central art server system. Moreover, replacing the current version of the operating system software stored in said memory with an updated version is also obvious to try because there are two finite choices for such software updates—incremental patches or a full replacement—and it would have been

obvious to a POSITA to try both." Johnson ¶1234. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's art space controllers specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controllers somehow to obtain software updates from the local art server. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2444. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss or Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Muoio.

2445. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xiv. Claim [15.] The digital display apparatus of claim 11 wherein said digital display apparatus is configured to display an account initialization message served from said server system.

2446. Dr. Johnson simply refers back to his discussion regarding Claim 5. Johnson ¶1444.

2447. Dr. Johnson admits that Muoio does not disclose the displaying an account initialization message, but asserts it would be obvious to do so based on Hoyle. Johnson ¶1387.

2448. I first note that I agree with Dr. Johnson that Muoio does not expressly disclose this claim limitation. I next note that Dr. Johnson asserts that Hoyle discloses that "a targeted advertisement display system may be configured to display a message asking of the user would like to set up a new account." Johnson ¶1393 (citing Hoyle at 26:49-27).

2449. Even if one were to agree with Dr. Johnson that a POSITA *could* make this combination, Dr. Johnson provides no reason why a POSITA *would* modify Muoio. All Dr. Johnson points to is the fact that Hoyle discloses displaying an account initialization message

when a user creates a new account. However, Dr. Johnson does not provide any reason why this would benefit Muoio. In fact, somehow having an art space controller in Muoio display an account initialization message makes no sense in the context of Muoio.

2450. As I explained in Section XIII.B.2.v, Muoio provides an open system in which art on any display device can be changed by any user. Although Dr. Johnson attempts to make it appear that user accounts would be needed in Muoio, such as because it may be desirable to lock people such as guests or visitors out of the system so that they cannot use the user interface to control play lists, Muoio includes no disclosure or suggestion of locking people out of the interface. Rather, since Muoio shows that a "guest room" can also include a display, art space controller, and UPC, then it would seem guests would also be encouraged to use the system. Muoio at 3:44-48. In fact, the Muoio artwork system was part of a project to apply the Muoio artwork system in Bill Gates' house. Evidence shows that visitors to Bill Gates' house had free reign to change the artwork without having to be authenticated.[205]

2451. Also, it would also be extremely user-unfriendly to require someone to log in to an account every time they tried to use one of the user control points. Further, there is no disclosure in Muoio that display devices or art space controllers are specific to users. Rather, they are specific

[205] https://www.eteknix.com/bill-gates-mansion-has-some-secrets/ ("On arrival at the Gates household, you'll be handed a little pin. his pin interacts with sensors built into the house, in turn, it then tracks your movement throughout the entire complex." "Many of the paintings in the house are digital, he has roughly $80,000 dollars of displays that then connect back to a $150,000 server farm. The server farm then has a nearly unlimited supply of artwork for ***you*** to switch to" (emphasis added); https://www.archute.com/bill-gates-house/ ("Unlike most houses that display actual paintings or art, Bill Gates's house features computer screens on the walls that display art and paintings. It is estimated that these wall screens are worth at least $80,000, and the art is stored on devices worth approximately $150,000. ***As a guest***, you can display your favorite pieces on these screens." Emphasis added)); https://economictimes.indiatimes.com/nation-world/peek-inside-bill-gates-124-million-mansion-xanadu-2-0/rotational-artwork/slideshow/56019674.cms ("***Anyone*** can make the screens display their favorite paintings or photographs, which are stored on devices worth $150,000.") (emphasis added).

to rooms. Thus, prompting users to create an account by displaying an account initialization message in Muoio is completely illogical.

2452. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

6. Claims 1, 2, and 5-8 of the '656 Patent are valid in view of Muoio in combination with one of Elgamal or RFC 2246, and one of Criss or Kottapurath, alone or further in combination with one of Jacklin or Stylistic Tablet, alone or further in combination with Kikinis

i. Claim [1.pre] A display device for displaying image data received from a server system comprising:

2453. For this element, Dr. Johnson refers back again to his analysis regarding Claim 1 of the '573 Patent and claim 1 of the '930 Patent and asserts that Muoio discloses an apparatus for displaying image data received from a server system by generally alleging that the art space controller of Muoio receives image data from the art server. Johnson ¶¶1452-1456.

2454. But Dr. Johnson ignores that, in Muoio, the display devices does not communicate with a server system. As shown in FIG. 6 of Muoio below, the art space controller 603, which Dr. Johnson alleges performs most of the claimed functions, is a separate device from the display device 605 that Johnson asserts is a display device having an integrated housing. The display devices 605 are essentially "dumb" monitor or television devices that have content displayed on them as via the art space controllers 603 and the user control points 606. Muoio at 6:27-29.

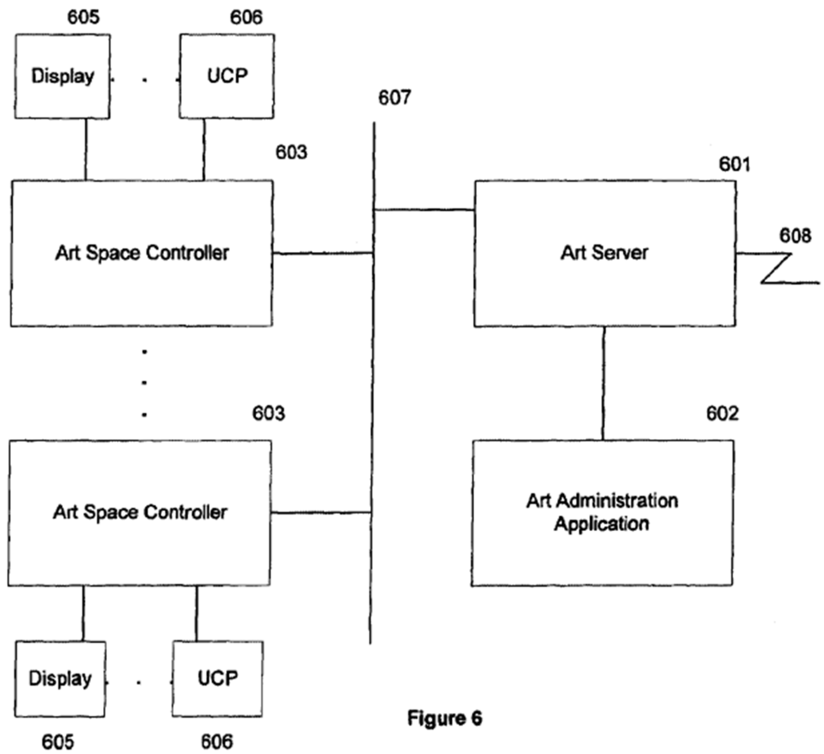
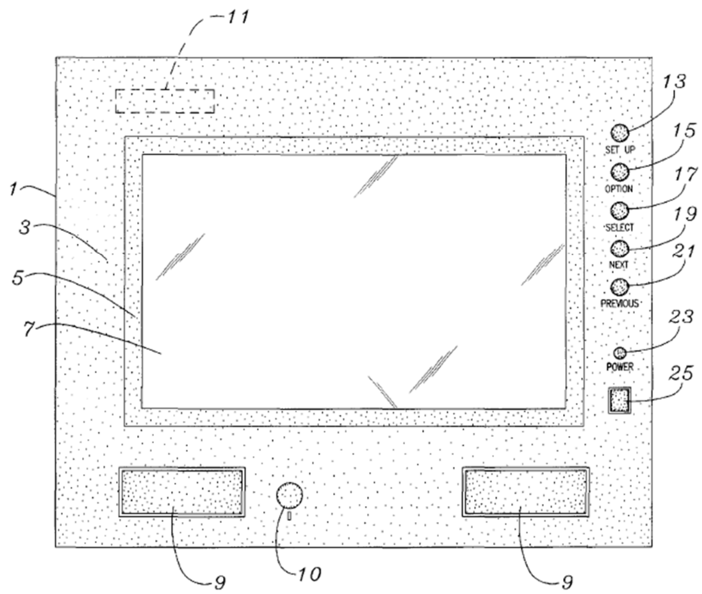


Figure 6

2455. Apparently recognizing Muoio's deficiencies, Dr. Johnson states: "[t]o the extent Muoio does not expressly disclose a display device for displaying image data received from a server system in the combination of an art space controller and an associated digital frame display, it would have been obvious to a POSITA, as of the earliest filing date of the '656 Patent, that the art space controller and associated digital frame display could be implemented in a single computer system, such as Jacklin's digital picture frame or Stylistic Tablet." Johnson ¶1290. As I explained in Section XII.C, Jacklin is a digital picture frame, shown for example below:

Fig. 1



2456. As I explained in Section XII.M, Stylistic Tablet is a tablet computer device, shown for example below.

2457. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> Moreover, a POSITA, as of the earliest filing date for the ’656 Patent, would have been motivated to combine Jacklin or Stylistic Tablet with Muoio’s client-server

> system to provide a digital art display frame to simplify the architecture of the art distribution system by implementing the art space controller and associated digital frame display into a single apparatus, such as Jacklin's digital picture frame or Stylistic Tablet. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device that displays the images distributed by Muoio's art distribution system. The combination is a simple substitution of one known element for another to obtain predictable results.

Johnson ¶1461.

2458. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2459. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio, but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2460. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead,

Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2461. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2462. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to

cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

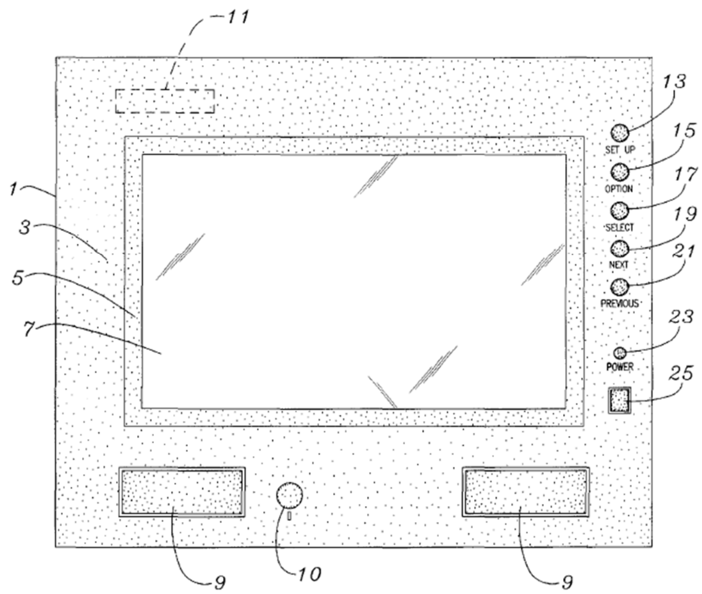
2463. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ii. Claim [1(a)] a central processing unit; [1(c)] a communications interface configured to communicate via a communications network; [1(d)] a memory comprising computer readable instructions for controlling the operation of said display device,

2464. Dr. Johnson asserts that Muoio alone or combination with Jacklin or Stylistic Tablet discloses these elements. Johnson ¶¶1463-1468, 1473-1476. However, as I have explained, the art space controller that Dr. Johnson relies on is a separate device from the display device in Muoio, and Muoio discloses nothing regarding the structure of the display device 605. Thus, Muoio does not disclose its display device has a display device disclosed as having a central processing unit, nor a communication interface configured to communicate via a communications network, nor memory comprising computer readable instructions for controlling the operation of said display device.

2465. Dr. Johnson again asserts that Jacklin or Stylistic Tablet could be used to provide display devices with explicitly disclosed memory and processors, but, again, Dr. Johnson provides no compelling motivations to combine Muoio with either Jacklin or Stylistic Tablet. As I explained in Section XII.C, Jacklin is a digital picture frame, shown for example below:

Fig. 1



2466. As I explained in Section XII.M, Stylistic Tablet is a tablet computer device, shown for example below.

2467. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> Moreover, a POSITA, as of the earliest filing date for the ’656 Patent, would have been motivated to combine Jacklin or Stylistic Tablet with Muoio’s client-server

> system to provide a digital art display frame to simplify the architecture of the art distribution system by implementing the art space controller and associated digital frame display into a single apparatus, such as Jacklin's digital picture frame or Stylistic Tablet. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device that displays the images distributed by Muoio's art distribution system. The combination is a simple substitution of one known element for another to obtain predictable results.

Johnson ¶1461.

2468. Dr. Johnson also states: "A POSITA, as of the earliest filing date of the '656 Patent, would have understood that the CPU of Jacklin's digital picture frame or processor of Stylistic Tablet would take the function of the processor in the art space controller and would have been motivated to make this combination for the reasons provided above," Johnson ¶1468, and "A POSITA would have recognized, as of the earliest filing date of the '656 Patent, that the operating system software of Muoio, Jacklin, and Stylistic Tablet each comprise a set of computer readable instructions that control the operation of the display device. A POSITA would have understood that execution of these instructions by the processor in each device would cause the device to carry out corresponding functions, such as the display of image data." Johnson ¶1475.

2469. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2470. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio, but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in

Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2471. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead, Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2472. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed

for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2473. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2474. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iii. Claim [1(e)] said computer readable instructions for controlling the operation of said display device comprising instructions for causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system, said communications session comprising the steps of:

2475. For this element, Dr. Johnson refers to his analysis with respect to claim 2 of the ’573 Patent and claim 1 of the ’930 Patent and their recitations regarding automatic communications. Johnson ¶1477. Dr. Johnson first again asserts that Muoio discloses automatically initiating a communications session with a server system.

2476. But, as I have explained in, Muoio does not disclose or suggest this. In Muoio, a portion relied upon by Dr. Johnson states:

> FIG. 17 is a flow diagram of the processing of an art display module. The art display module overlaps the displaying of an image with retrieving from the art server of the next image to be displayed. The module continually displays the images in the play list by displaying the first image in the play list after the last image is displayed. The art display module is provided with a display list. In step 1701, the module selects the first image in the display list. In step 1702, the module retrieves the selected image from the art server. In steps 1703-1707, the module loops displaying the images in the play list at the specified intervals. In step 1703, the module displays the last retrieved image. In step 1704, the module selects the next image in the display list. In step 1705, the module retrieves the selected image from the art server. In step 1705, the modules pauses for the requisite interval or until a user touches the panel. In step 1706, if the user touches the panel, then the module continues at step 1707, else the module loops to step 1703 to select and display the last retrieve image. In step 1707, the function displays the information relating to the current image and then loops to step 1705 to pause. The display of the information corresponds to FIG. 1. In one embodiment, the module may cache the images so that each image of a play list only needs to be retrieved once.

Muoio at 9:47-10:3 (emphasis added).

2477. First, as shown above, it is Muoio's art space controllers that performs this process, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2478. Also, the art server *pushes* play lists to art space controllers independent of any request:

> In step 1802, the module displays the user interface for the user control point device. In step 1803, if the user indicated to assign a new play list the space, then the module continues at step 1804, else the module returns. In step 1804, the module notifies the *art server* to change the play list assignment for the space. **The *art server* then sends out an event to notify the art space controllers that the play list has changed.**

Muoio at 10:7-14 (emphasis added).

2479. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller, and thus Muoio does not disclose a

display device that automatically initiates communications. And again, the art space controller only retrieves each image ***after it has already received the play*** list, since Muoio further states that the "art display module is provided with a display list," Muoio at 9:52-53, which occurs prior to retrieving the first image in the display list. Muoio at 9:53-56.

2480. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller, and thus Muoio does not disclose a display device that automatically initiates communications.

2481. Since Muoio only discloses that separate art space controllers retrieve images after play lists are pushed to the art space controllers, Muoio does not disclose a display device that automatically initiates communications and receives a set of image data in response to a request.

2482. Apparently recognizing that Muoio is deficient, especially in that Muoio does not disclose "upon connection to a power source and a communications source," Dr. Johnson attempts to combine Muoio with each of Criss, Kottapurath, and Kikinis. Johnson ¶¶1479-1485. First. Dr. Johnson states that it would be obvious that prerequisites such as having a connect power source and communications source would be needed before initiating a communications sessions. Johnson ¶1478. But it is simply having such connections that matters here, but the automatic nature of initiating the communications ***upon*** establishing those connections.

2483. It should be also noted that none of Criss, Kottapurath, and Kikinis are in the same field of endeavor as the Patents-in-Suit: personal display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing display devices required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how

to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated display device design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2484. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine Criss with Muoio. Johnson ¶1480. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. This is in an entirely different field than Muoio or the Patents-in-Suit. Criss is related to managing cellular networks, not to the field of consumer digital display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2485. Regardless, Criss describes a process in which a mobile device communicates with a host computer 30 that "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" A host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an

exchange with the FTP server 31 to download the latest version of operating software available." Criss, 7:32-46.

2486. Criss thus discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit. Muoio has the same problem, in that it discloses the art space controllers must request each specific identified image in a play list from the art server.

2487. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶1481. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

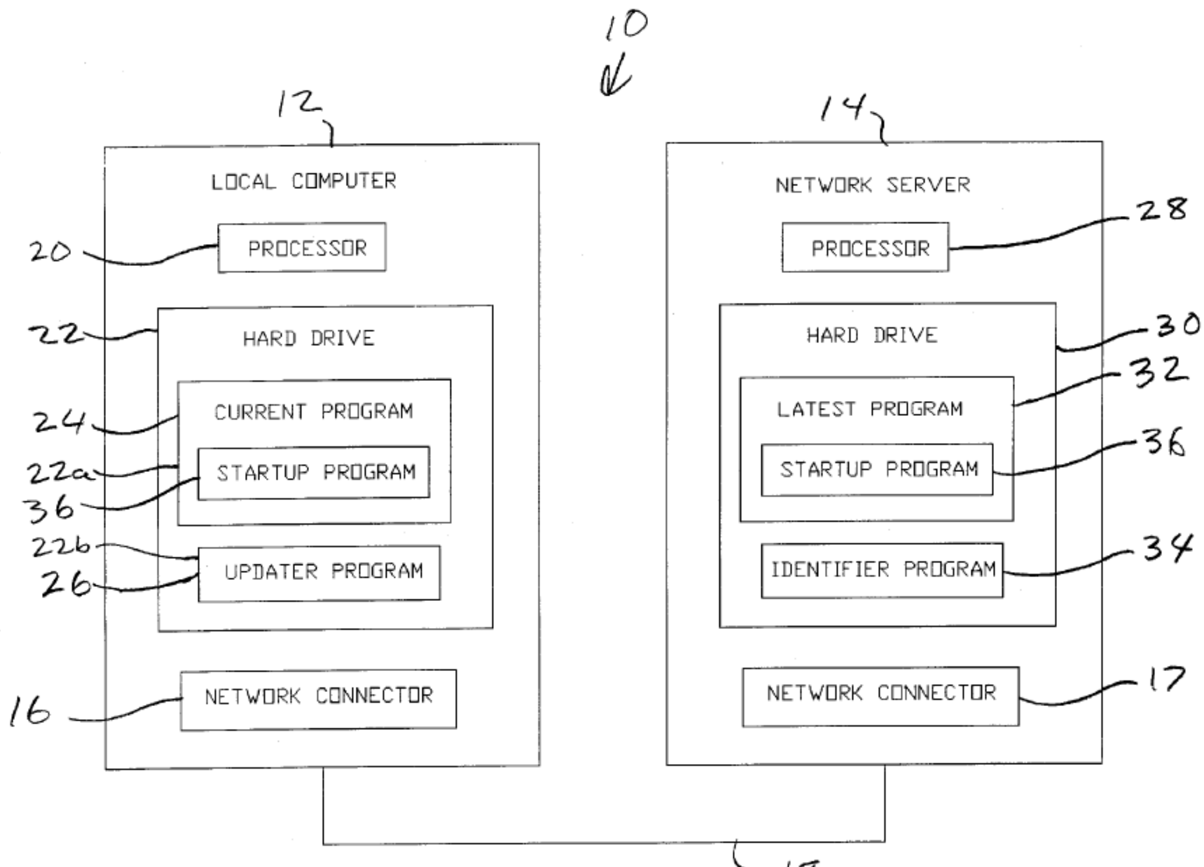


Fig. 1

2488. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

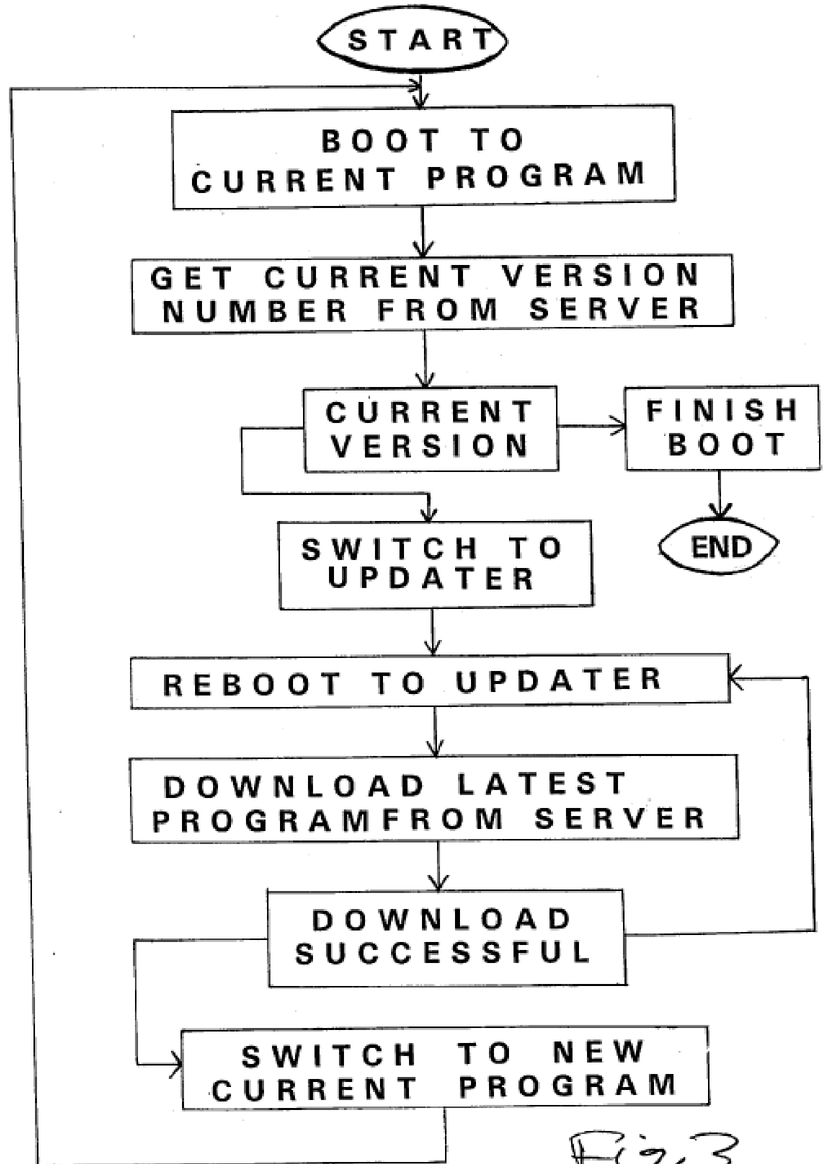


Fig. 3

2489. Dr. Johnson also asserts that Kikinis discloses this element, stating:

Kikinis discloses a service, including an apparatus and software, "that enables users who have purchased an Internet appliance such as a WEB phone, for example, to obtain third-party assistance in setting-up and configuring the device for successful operation." Kikinis at 4:22-27. "Such Internet appliances include any device that is used for accessing and operating on the Internet, or other types of switch-packet networks that may stand alone or be linked to the Internet. Examples are WEB phones, WEB TV's, Palm-top computers, Internet capable cell phones, Laptop computers, and so on." *Id.* at 4:43-48. When "a user plugs in a specific Internet appliance . . . and insures that all hardware and connections are correct . . . the user

> calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased. The appliance is then connected to server 21." *Id.* at 8:22-29. The server then communicates with the Internet appliance to perform set-up operations, which may include software updates. *Id.* at 8:41-60, 6:26-35.

Johnson ¶1482.

2490. First, Kikinis is not analogous art, as it deals with a process to set up telephones. Also, as shown above, Kikinis discloses that a device can call a 1-800 number to get assistance, but only when a user performs the call, or when a user gives permission for the device to perform the call. Kikinis thus does not disclose an automatic process. Dr. Johnson, recognizing this, essentially says that it would be "obvious that obtaining the user's permission could be omitted." Johnson ¶1483. There is no suggestion in Kikinis to omit how Kikinis is disclosed to operate, and Dr. Johnson appears to only state it would be obvious to do so based on hindsight and a need to try to reach this claim element, neither of which is a proper motivation to modify Kikinis.

2491. Dr. Johnson then states: "A POSITA would have been motivated to incorporate the teachings of any one of Criss, Kottapurath, or Kikinis with Muoio," and that "POSITA would have understood that by automatically initiating communication with the art server, e.g., when the display device is powered on and connected to the Internet, the device can more quickly receive and begin displaying image data and other information, while minimizing the need for user intervention." Johnson ¶1484. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's disclosure specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controller somehow to connect to a server and obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2492. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss, Kottapurath, or Kikinis (although as indicated above, I do not agree that they necessarily could be combined), but does not provide sufficient reasons for why a POSITA *would* attempt such modifications to Muoio, given that Muoio's system already has a working system that, for example, operates by the art server first pushing play lists out to art space controllers.

2493. See also Section XIII.B.1 regarding claim 2 of the '573 Patent.

2494. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iv. Claim [1(f)] sending a request for image data to said server system via said communications network;

2495. For this element, Dr. Johnson refers to his analysis with respect to claim 2 of the '573 Patent and claim 1 of the '930 Patent and their recitations regarding automatic communications. Johnson ¶1486.

2496. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

2497. Dr. Johnson first again asserts that Muoio discloses, in combination with Criss, Kottapurath, or Kikinis, automatically initiating a communications session with a server system upon connection to a power source and a communications source, which I have addressed above. For at least this reason, this element is also not met.

2498. Also, as I have explained, in Muoio, a portion relied upon by Dr. Johnson states:

> FIG. 17 is a flow diagram of the processing of an art display module. The art display module overlaps the displaying of an image with retrieving from the art server of the next image to be displayed. The module continually displays the images in the play list by displaying the first image in the play list after the last image is displayed.

> The art display module is provided with a display list. In step 1701, the module selects the first image in the display list. In step 1702, the module retrieves the selected image from the art server. In steps 1703-1707, the module loops displaying the images in the play list at the specified intervals. In step 1703, the module displays the last retrieved image. In step 1704, the module selects the next image in the display list. In step 1705, the module retrieves the selected image from the art server. In step 1705, the modules pauses for the requisite interval or until a user touches the panel. In step 1706, if the user touches the panel, then the module continues at step 1707, else the module loops to step 1703 to select and display the last retrieve image. In step 1707, the function displays the information relating to the current image and then loops to step 1705 to pause. The display of the information corresponds to FIG. 1. In one embodiment, the module may cache the images so that each image of a play list only needs to be retrieved once.

Muoio at 9:47-10:3 (emphasis added).

2499. First, as shown above, it is Muoio's art space controllers that performs this process, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2500. Also, as I have explained, the art server is on a local network with the art space controllers and is thus not a "first remote server system," as shown for example in FIG. 6 of Muoio below.

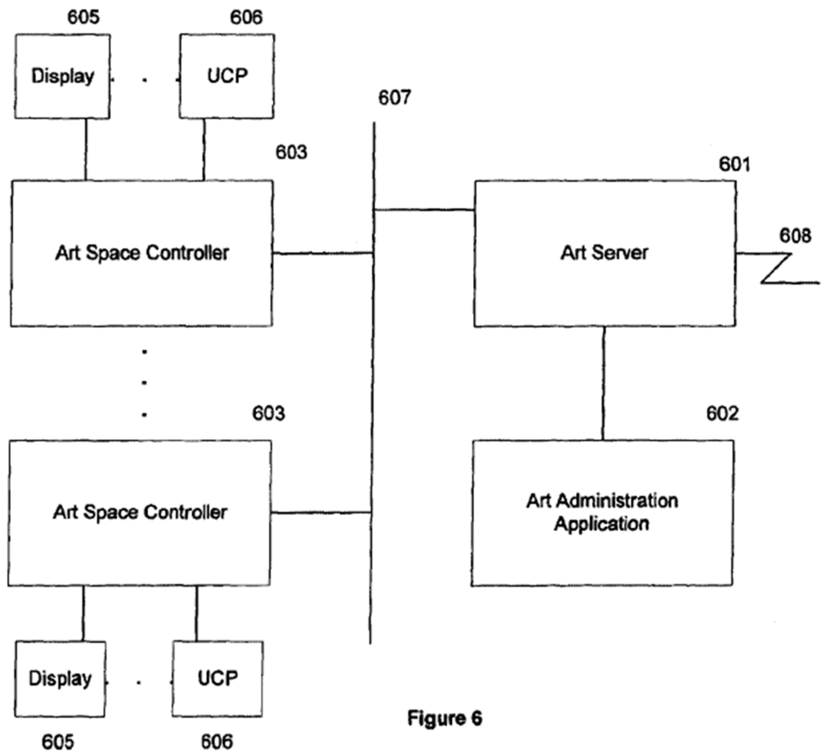


Figure 6

2501. Also, the art server *pushes* play lists to art space controllers independent of any request:

> In step 1802, the module displays the user interface for the user control point device. In step 1803, if the user indicated to assign a new play list the space, then the module continues at step 1804, else the module returns. In step 1804, the module notifies the *art server* to change the play list assignment for the space. **The *art server* then sends out an event to notify the art space controllers that the play list has changed.**

Muoio at 10:7-14 (emphasis added).

2502. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller, and thus Muoio does not disclose a display device that automatically initiates communications. And again, the art space controller only retrieves each image ***after it has already received the play*** list, since Muoio further states that the "art display module is provided with a display list," Muoio at 9:52-53, which occurs prior to retrieving the first image in the display list. Muoio at 9:53-56.

2503. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

v. Claim [1(g)] receiving image data and authentication information from said server system in response to said request; [1(h)] authenticating said server system;

2504. As described above, the cited references do not disclose or suggest receiving image data in response to a request sent after automatically initiating a communications session with a server. The cited references also do not disclose or suggest receiving authentication information from said server system in response to said request, nor authenticating said server system.

2505. For this claim limitation, Dr. Johnson again refers mainly to his analysis with respect to claim 2 of the ’573 Patent. Johnson ¶¶1490, 1497, 1500-1502.

2506. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

2507. Dr. Johnson admits that Muoio does not disclose authentication, but asserts that, because Muoio discloses the art space controllers and the art server, it “would have been obvious to modify Muoio to perform client-server authentication,” based on Elgamal’s or RFC 2246’s disclosures, “e.g., authenticating the server system before storing package data comprising image data and preferences in memory of the frame device.” Johnson ¶¶1188-1195. Dr. Johnson asserts a POSITA would be motivated to implement authentication between the art space controllers and the art server because “[a] POSITA . . . would have been motivated to combine Muoio with the security and device authentication features, including the security handshaking prior to the transfer of data, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and authenticate the devices within Muoio’s client-server (art controller and associated display device—art server system) image distribution system.” Johnson ¶1363.

2508. But, as I explained in Section XIII.B.1, the art server and the art space controllers are within a local network, i.e., a local network in a same building, and do not communicate over the Internet. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
    - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).
    - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.
- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the

function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).

- This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2509. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

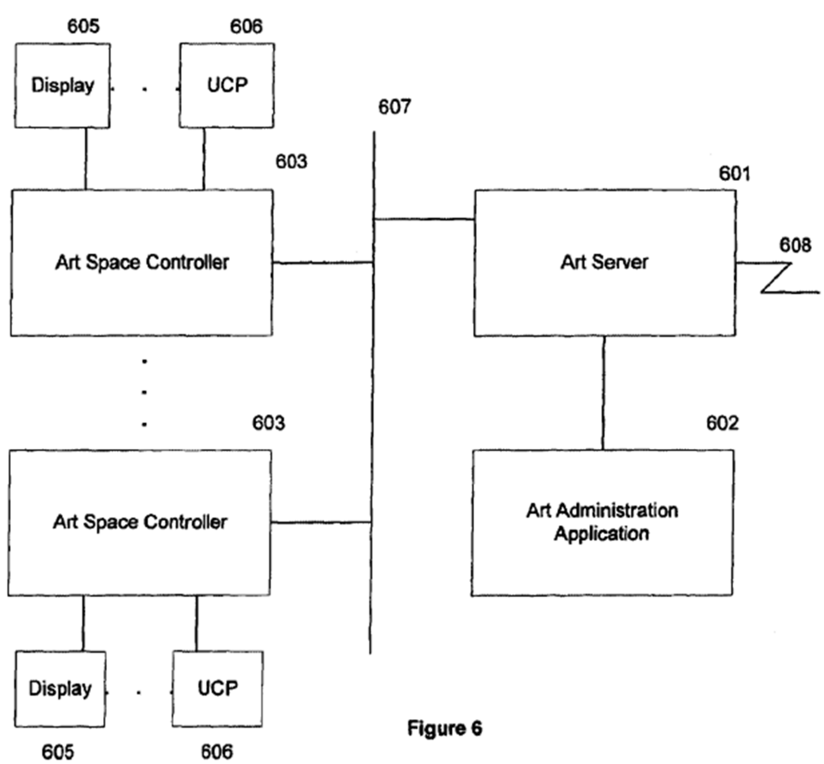


Figure 6

2510. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2511. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error. Dr. Johnson also asserts that a POSITA would be motivated to combine Muoio and Elgamal or RFC 2246 so that, in communications between Muoio's art space controllers and art server, communications are "prevent[ed] from being intercepted, altered, or otherwise compromised." Johnson ¶¶1197-1202.

2512. This is illogical. Elgamal and RFC 2246 emphasize they are directed to communications between entities over the public Internet. Elgamal at 1:63-2:22; RFC 2246 at 1. While some local networks could benefit from certain security protocols, Muoio's system is a fairly simple local system that has a small art space controller device pull images stored on a larger art server computer that acts as a storage device in a real-time manner (that is, as the art space controller reaches each image in a play list). Muoio at 9:47-10:3. A POSITA would see little need to implement security measures such as encryption and authentication between the art space controllers and the local art server.

2513. Although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Muoio. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶1189-1194, 1361-1362, 1494-1495. However, SSL and TLS were both computationally intensive tasks that require what in 1999

would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[206] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[207] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2514. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2515. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

[206] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[207] *Id.*

2516. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable. As was discussed earlier in this report, simply using a computer name such as exists on my own office network, would be much more efficient. The art server could be given a name such as ***artserver***. This eliminates the need for the complexities and overhead that comes with digital certificates.

2517. Dr. Johnson states: "The combination of Elgamal with Muoio is a combination of prior art elements according to known methods to yield predictable result." Johnson ¶1200. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Second, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2518. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that.

Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2519. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

vi. Claim [1(i)] storing said received image data in said memory;

2520. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

2521. Second, I note that this element cannot be met for the same reasons as elements [1(f)] and [1(g)] of the '656 Patent because, since Muoio alone or in combination does not disclose or suggest "sending a request for image data to said server system via said communications network" and "receiving image data," then Muoio cannot disclose or suggest storing ***said received*** image data. Again, the display device in Muoio does not store any image data.

2522. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

vii. Claim [1(j)] displaying said image data on said display screen;

2523. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

2524. Second, I note that this element cannot be met for the same reasons as elements [1(f)], [1(g)], and [1(i)] of the '656 Patent because, since Muoio alone or in combination does not disclose or suggest "sending a request for image data to said server system via said

communications network," "receiving image data," and "storing said received image data in said memory," then Muoio cannot disclose or suggest displaying ***said received*** image data.

2525. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

viii. Claim [1(k)] receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network; [1(l)] automatically updating said computer readable instructions for controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device;

2526. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

2527. For this claim limitation, Dr. Johnson again refers to and reuses his analysis regarding the '573 Patent, asserting that Muoio could be combined with one Criss or Kottapurath to provide software updates. Johnson ¶¶1515-1519.

2528. I also note that, as Claim 1 of the '656 Patent also recites authentication, to attempt to reach all claim elements of Claim 1 of the '656 Patent, Dr. Johnson is combining three or more prior art references together, which a POSITA would recognize starts to become untenable. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson

appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

2529. First, I note that the art space controllers and the display devices of Muoio are separate devices, as I explained in Section XIII.B.1. I do agree with Dr. Johnson that Muoio does not disclose any method or process to obtain an update for software.

2530. Dr. Johnson then combines, in the alternative, each of Criss and Kottapurath with Muoio to attempt to meet this claim element. Johnson ¶¶1229-1243. However, it should be also noted that neither Criss nor Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2531. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Muoio. Criss is related to managing cellular networks, not to the field of consumer home/office display devices. Criss also does not address the problems described in the

Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2532. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

2533. This claim requires the at least one digital picture frame obtain operating system updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the frame device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit.

2534. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶1232-1233. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

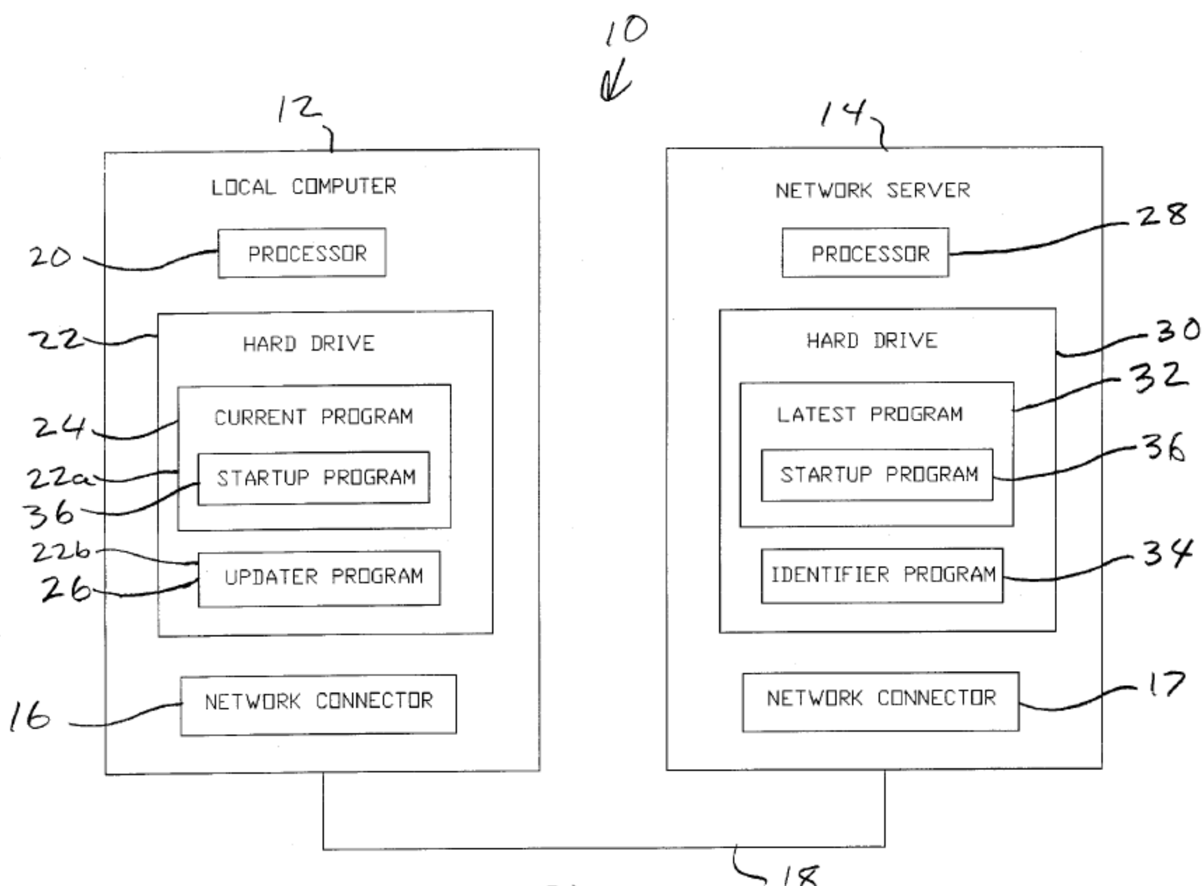


Fig. 1

2535. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

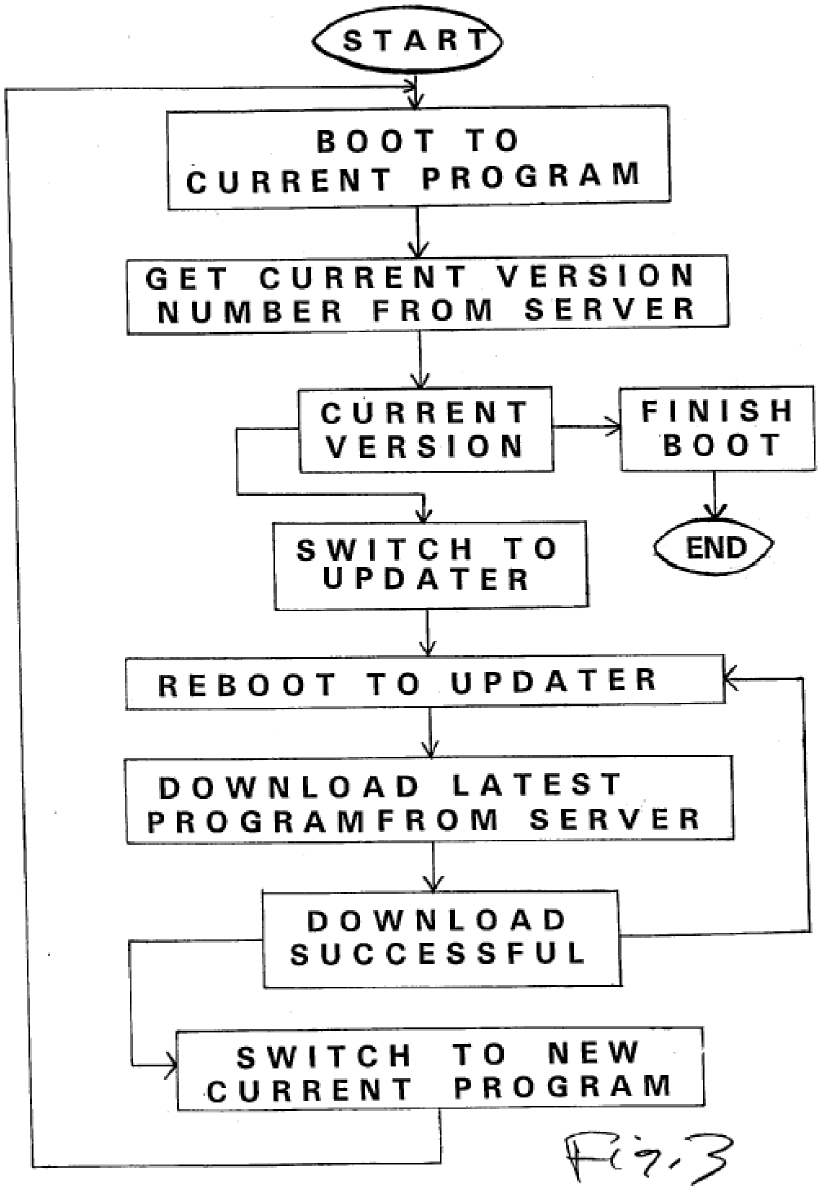


Fig. 3

2536. Dr. Johnson then states: "a POSITA would have been motivated to combine the software update and replacement functions described in Criss or Kottapurath with the client-server system in Muoio to provide art space controller software updates through a central art server

system. Moreover, replacing the current version of the operating system software stored in said memory with an updated version is also obvious to try because there are two finite choices for such software updates—incremental patches or a full replacement—and it would have been obvious to a POSITA to try both." Johnson ¶1234. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's art space controllers specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controllers somehow to obtain software updates from the local art server. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2537. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss or Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Muoio.

2538. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ix. Claim [1(m)] said computer readable instructions for controlling the operation of said display device further comprising instructions for causing said display device to instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device.

2539. Dr. Johnson asserts that Muoio alone "discloses this limitation. Johnson ¶1528-1533. Dr. Johnson's reasons are clearly inadequate for the reasons below.

2540. First, Dr. Johnson states that Muoio illustrates the user control point interface by which a user can assign playlists to a space, submit queries for additional image data, and otherwise

manage the display of image data on the display device, and refers to the user interfaces shown in Figures 4 and 5, below.

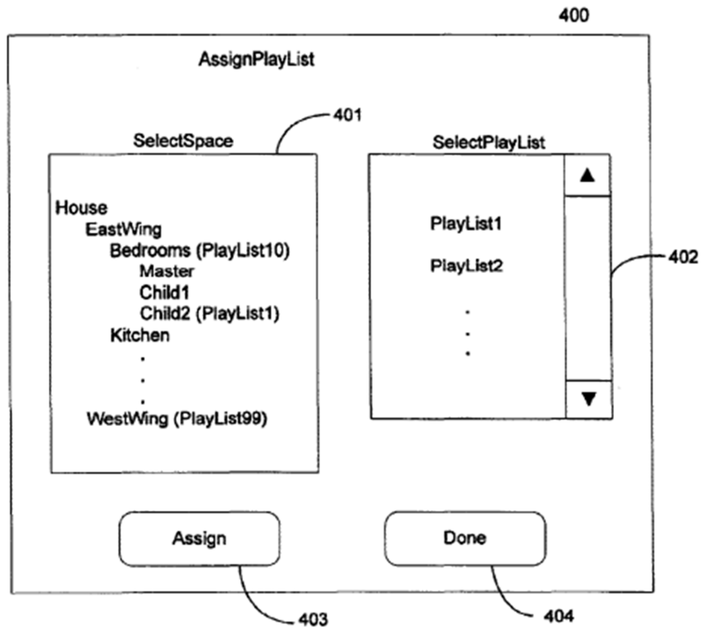


Figure 4

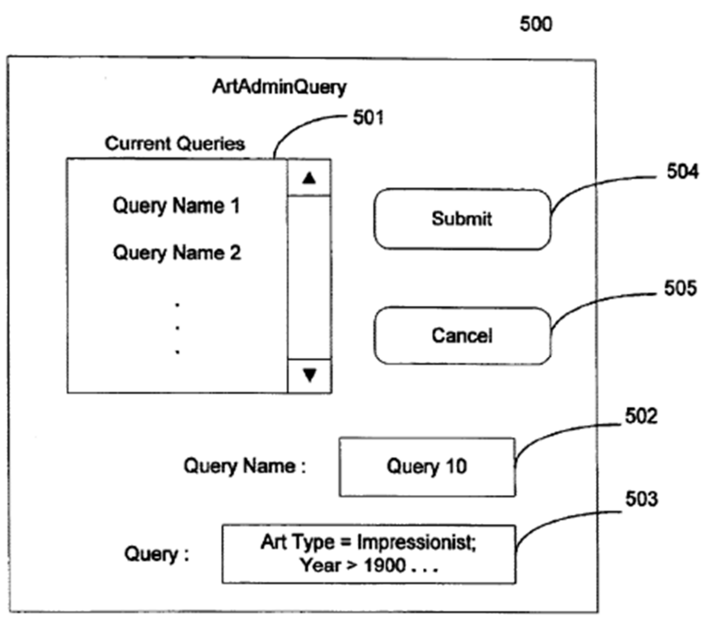


Figure 5

2541. Dr. Johnson asserts that "[a] POSITA would have understood that the interfaces allow a user to manage the behavior characteristics of the display device (i.e., the combined art space controller/display device) by adding or removing one or more items of art from a playlist (FIG. 3), assigning playlists to spaces (FIGS. 2, 4), and submitting queries for images to be added to a playlist (FIG. 5). A POSITA would have recognized the display functionality and content being displayed as the managed behavior characteristics." Johnson ¶1530. Dr. Johnson, erroneously, identifies all the user interfaces shown in Figures 2-5 of Muoio as "the user control point interfaces displayed in Figures 2-5." Johnson ¶1530. These are actually separate displays associated with different equipment in the Muoio system. As one example, "FIG. 3 illustrates a user interface for managing the play lists. The art distribution System allows a user to create and modify play lists." Muoio at 5:5-7. Figure 3 is an interface on the art distribution center. This is further clarified in Figure 11 which is a flowchart of the Muoio process.

2542. But Muoio only discloses that the user interface of Figure 2 (for selecting a playlist within a space) is provided by the user control point. Muoio discloses that "[a] user can specify a play list to be displayed within the space using the user control point device," Muoio at 4:7-9, that "FIG. 2 illustrates the display ***of a user control point*** for specifying a play list for a certain space," Muoio at 4:55-57, and that FIG. 18 is a flow diagram of the art interface module [which] controls the user interface of FIG. 2." Muoio at 10:4-5. The user control point and art space controller are not described again with reference to any other user interface. The art user interface module is part of the art space controller directly connected to the user control point, as shown in Figure 9 of Muoio, below.

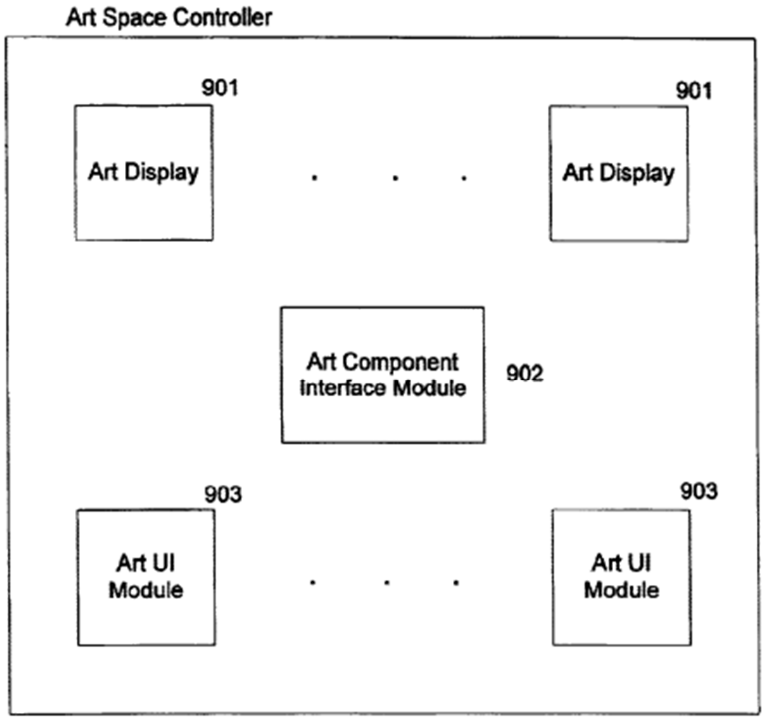


Figure 9

2543. For reference, the overall architecture of Muoio is shown in Figure 6, below.

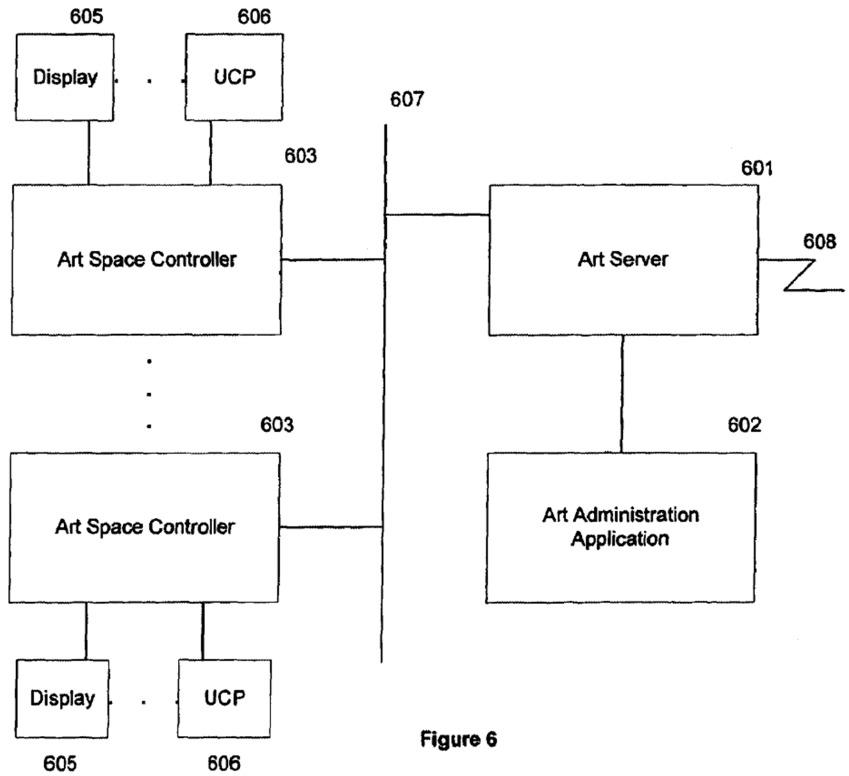


Figure 6

2544. However, the other user interfaces are described as being provided by other devices in Muoio. As shown above, the art administration application is an application at the art server. The art administration application provides the user interfaces shown in Figures 3-5, not the art space controller or user control point. The art administration application is shown in Figure 8, below.

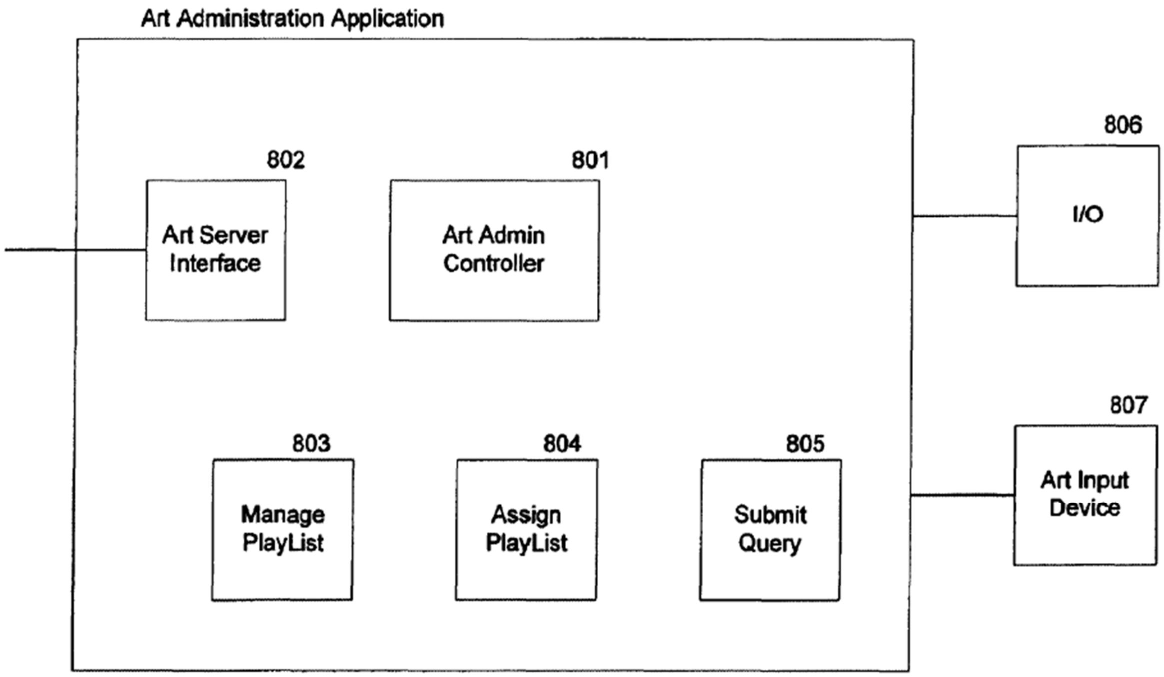


Figure 8

2545. Muoio discloses that "FIG. 11 is a flow diagram of the manage play list function of the art administration application." (803 in FIG. 8 above) and "[t]his function displays the user interface corresponding to FIG. 3." Muoio at 8:29-31. Muoio also discloses that "FIG. 12 is a flow diagram of the assign play list to space function" (804 in FIG. 8 above) and "[t]his function displays the user interface corresponding to FIG. 4." Muoio at 8:29-31. Muoio also discloses that the art administration application has a "submit query component 805," Muoio at 7:14-19, which corresponds to user interface of FIG. 5 "for submitting a query," Muoio 5:51, as also shown in FIG. 5 above having the title "ArtAdminQuery."

2546. Therefore, unlike the interface of FIG. 2, nothing in Muoio associates the user interfaces of Figures 3-5 with the user control point or art space controller. This demonstrates Dr. Johnson's lack of thorough review and understanding of Muoio.

2547. Dr. Johnson further asserts that the interfaces of Figures 2-5 "could be accessible by a web browser" because "the user control point communicates with the art server through a communications channel 607, which may be the Internet." Johnson ¶1531. As I explained in Section XIII.B.1, Dr. Johnson's understanding is incorrect.

2548. Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67; 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
    - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).
    - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.
- FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function

determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).

- This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2549. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

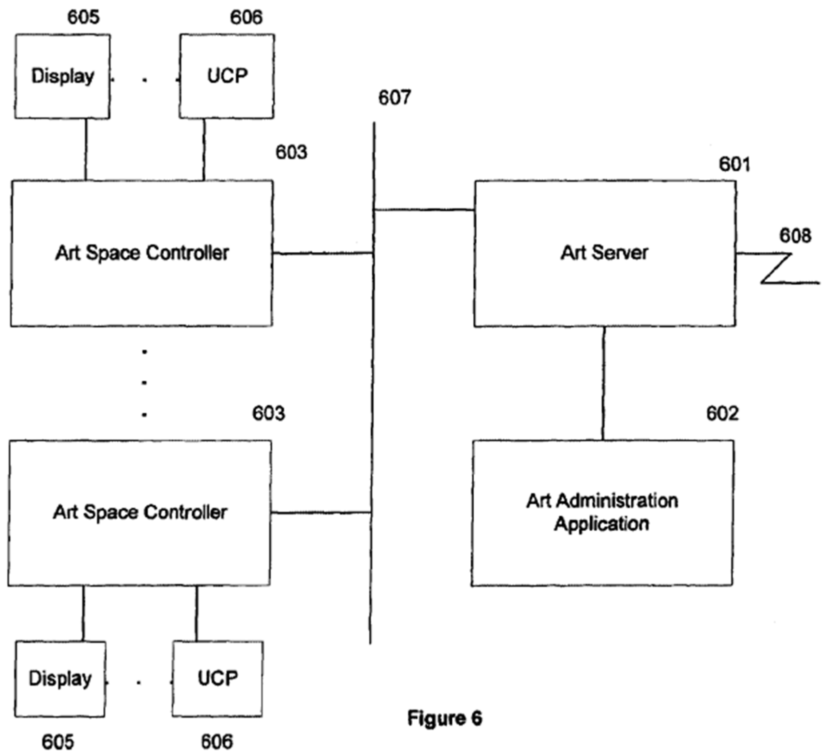


Figure 6

2550. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2551. As shown above, Dr. Johnson's statement that "the user control point communicates with the art server through a communications channel 607, which may be the Internet," is clearly in error. There is no disclosure or suggestion in Muoio of using a web browser for any interface in Muoio. Dr. Johnson simply states that this "***could*** occur through a web browser," Johnson ¶1531 (emphasis added), but offers no reason why a POSITA *would* somehow modify Muoio (which already discloses a functioning local system without a web browser) to use a web browser. For at least this reason, Dr. Johnson assertion that "Muoio discloses this limitation" is incorrect.

2552. Finally, Dr. Johnson states

> Still further, it would have been obvious to a POSITA that the display device of Muoio (i.e., the combined art space controller and display) ***could*** instruct the art server to create the interface. For example, a POSITA would have recognized that this instruction could be sent in connection with registration of a display device with the art server and would include information about the display device and the spaces in which images are displayed, such as an identification of the specific wings, rooms, and bedrooms of the user's house, as shown in FIG. 4 (e.g., "EastWing," "Master," "Child1," "Child2," "Kitchen," "WestWing"). A POSITA would have understood that the interface provided by the art server would reflect this information and would be generated in response to the instruction from the display device.

Johnson ¶1532 (emphasis added).

2553. Dr. Johnson's statement does not make sense. The user interfaces in Muoio are all already a part of the system, and separate spaces are simply identified in a list, such as shown in Figure 4. There is no need for a display device or art space controller to send an instruction to the server to "create" a user interface. Also, as shown above, Dr. Johnson simply states a display device *could* instruct the art server to create an interface but does not adequately explain why this would be needed or desired in Muoio. Muoio is a self-contained system that was simply seeking to provide a system within a local environment for displaying artwork. The '656 Patent, on the other hand, had to solve the problem of managing display devices that would be sold and distributed geographically distant from the backend server system, and that would also provide a user interface specific to each frame device. The '656 Patent explains that:

> The initialization process begins at step 800 when the frame device is connected to a power Source and a communication medium such as a telephone line or network connection. The frame device may be configured to automatically connect via a wireless connection or the user may manually couple it to a power source and communication medium.
>
> . . .
>
> At step 805, the data repository is analyzed to determine whether there is a record for the frame device initiating the connection. If a record for the frame device is not

> located, step 807 executes and an image prompting the user to create a picture box account associated with that frame device is displayed to the user.
>
> . . .
>
> Once the picture box is obtained, step 813 executes, at step 813 the behavior characteristics of the frame device is determined. The behavior characteristics may be established by default or customized according to the user's preferences. When the behavior characteristics are determined, step 815 executes. At step 815, the invention contemplates loading the behavior characteristics into the data repository for use by the frame device.

'930 Patent at 23:64-24:3, 24:15-21, 24:44-51.

2554. Therefore, this prompting by the display device to create the interface as described, for example, in this portion of the '656 Patent refers to an automatic initialization process carried out by the display apparatus to ensure the user has a record and picture box interface associated with the remote server system. This type of process is not disclosed or suggested in Muoio, and there would be no motivation to add such a process to Muoio.

2555. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

x. Claim [2.] The display device of claim 1 wherein said computer readable instructions for storing said image data in said memory further comprise instructions for causing image data previously stored in said memory to be replaced with said received image data.

2556. First, I note that Claim 1 and 2 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

2557. Second, I note that this element cannot be met for the same reasons as elements [1(f)], [1(g)], and [1(i)] of the '656 Patent because, since Muoio does not disclose or suggest "sending a request for image data to said server system via said communications network," and "receiving image data," and "displaying ***said*** image data," then Muoio cannot disclose or suggest

"causing image data previously stored in said memory to be replaced with ***said received*** image data," as recited in Claim 2.

2558. Also, Dr. Johnson asserts that, although Muoio does not disclose this claim element, the it would be obvious for the art space controller to replace image data with newly received image data because images can be cached in Muoio and the cache "would have a maximum amount of available storage" and thus it "would be obvious to replace previously stored image data . . . with newly stored image data." Johnson ¶¶1537-1538. But this makes assumptions that are not based on any disclosure in Muoio or the other references. It would not be obvious to simply replace images on Muoio's art space controllers if memory capacity is at issue. I note that filling up storage and requiring manual storage management is much more common than the alternative of automatic replacement Dr. Johnson proposes, such as when a computer's hard drive fills up and needs to have contents manually deleted to free up space.

2559. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xi. Claim [5.] The display device of claim 1 wherein said memory further comprises preference information for controlling the display of said image data by said display device.

2560. For this element, Dr. Johnson again Dr. Johnson again cites portions of Muoio that discuss play lists and that users can modify play lists using the user control point, and alleges that this means the display devices 605 are configured to operate according to preferences comprising an image display list defined by a user. Johnson ¶¶1108-1111, 1155-1157, 1545-1547.

2561. However, as I described above, it is the art space controller 603 of Muoio that receives images from the local art server 601 and handles play lists, not the display device. The display devices 605 of Muoio are "dumb" devices akin to a traditional large computer monitor or television screen that merely receive images for display from an outside source, in this case the art

space controller 603. Therefore, the display devices 605 in Muoio do not have memory comprising preference information for controlling the display of said image data by said display device.

2562. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xii. Claim [6.] The display device of claim 5 wherein said preference information comprises communication timing information for specifying the timing of sending requests for image data to said server system.

2563. Dr. Johnson again asserts that Muoio discloses this claim because Muoio discloses that the art space controller retrieves play list images from the art server. Johnson ¶¶1396-1399, 1549-1552.

2564. But as I explained in Section XIII.B.1.iv. it is Muoio's art space controllers that performs this process of retrieving images, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a *display device* that has memory storing preference information comprising communication timing information for specifying the timing of sending requests for image data to said server system.

2565. Additionally, as I explained in Section XIII.B.1, the art server in Muoio is on a local network with the art space controller, and thus the art space controller is not a "first remote server system."

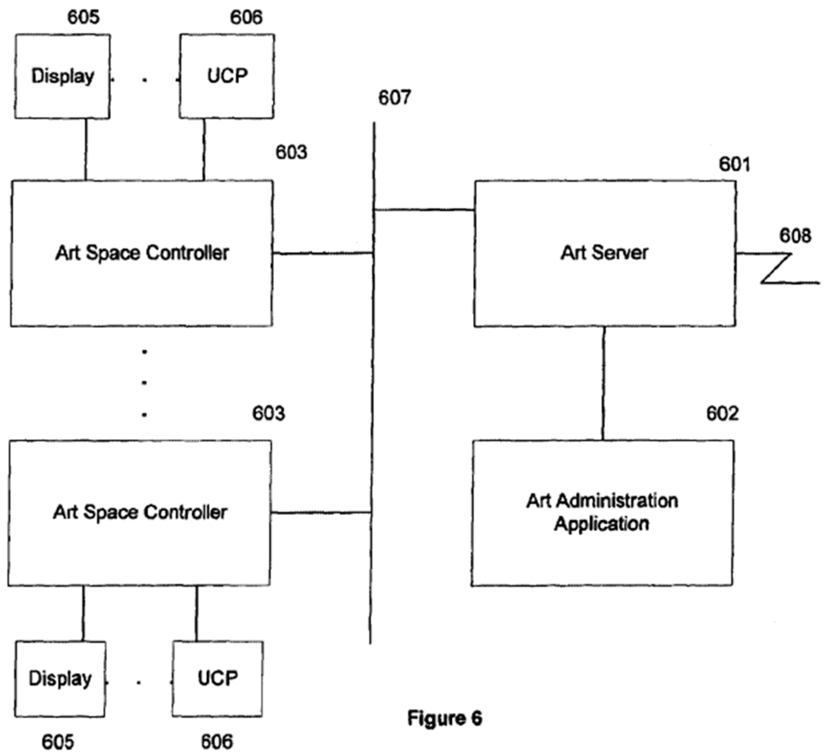


Figure 6

2566. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xiii. Claim [7.] The display device of claim 5 wherein said preference information comprises display timing information for specifying the timing of displaying said image data on said display screen.

2567. Claim 7 is valid for at least all the reasons I described with respect to Claim 1 and because, again, Muoio does not disclose that the *display device* includes a memory having preference information comprising display timing information for specifying the timing of displaying said image data on said display screen. The separate art space controllers handle play lists for display.

2568. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xiv. Claim [8.] The display device of claim 5 wherein said preference information comprises an image display list.

2569. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation and because, again, Muoio does not disclose that the *display device* includes a memory having preference information comprising an image display list. The separate art space controllers handle play lists for display.

2570. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

7. Claims 1, 11, and 20 of the '562 Patent are valid in view of Muoio in combination with Hoyle, and one of Nishiyama, Elgamal, or RFC 2246, and one of Criss or Kottapurath, alone or further in combination with one of Jacklin or Stylistic Tablet, alone or further in combination with Kikinis

2571. I note that Dr. Johnson is combining four or more prior art references together to try to reach the claim elements of claim 1 of the '562 Patent, which a POSITA would recognize starts to become untenable. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning to try to reach all claim elements of the Patents-in-Suit by piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

i. Claim [1.pre] An apparatus for displaying content comprising image data received from a server system via a communications network on a display screen comprising:

2572. For this element, Dr. Johnson refers back again to his analysis regarding claim 1 of the ’573 Patent, and claim 1 of the ’930 Patent, and asserts that Muoio discloses an apparatus for displaying content comprising image data received from a server system via a communications network on a display screen by generally alleging that the art space controller of Muoio receives images from the art server for display on a display device. Johnson ¶¶983-985, 1561-1567.

2573. As I have explained in Sections XIII.B.1, however, Dr. Johnson ignores that, in Muoio, the display device does not communicate with a server system. As shown in FIG. 6 of Muoio below, the art space controller 603, which Dr. Johnson alleges performs most of the claimed functions, is a separate device from the display device 605 that Johnson asserts is a display device having an integrated housing. The display devices 605 are essentially “dumb” monitor or television devices that have content displayed on them as via the art space controllers 603 and the user control points 606. Muoio at 6:27-29.

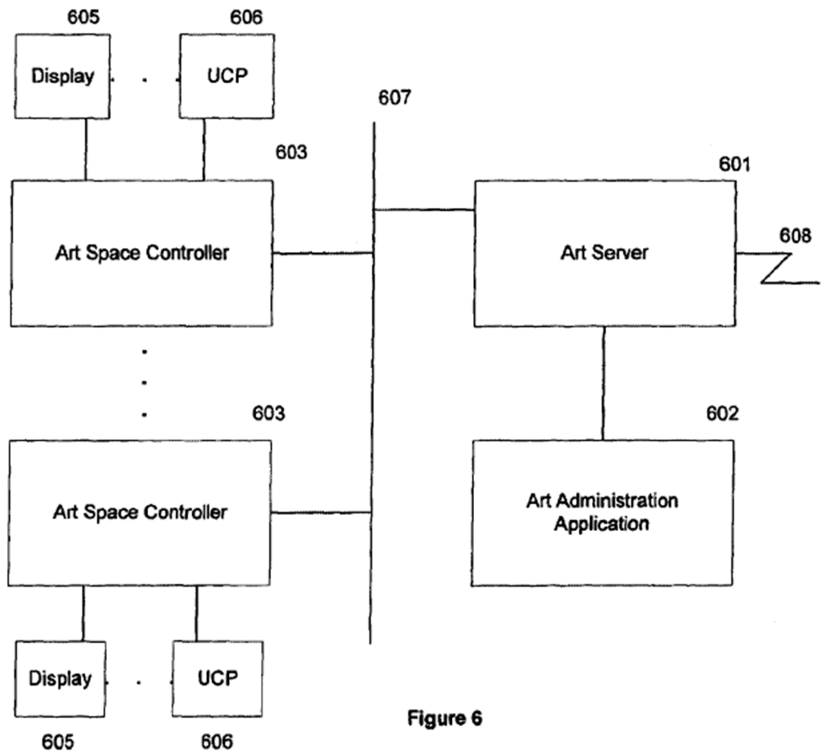
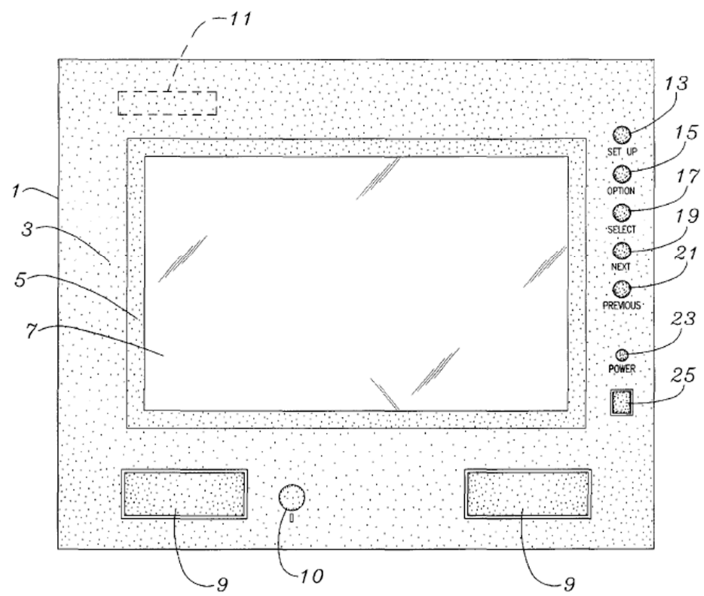


Figure 6

2574. Apparently recognizing Muoio's deficiencies, Dr. Johnson states: "[t]o the extent Muoio does not expressly disclose an apparatus for displaying content on a display screen in the combination of an art space controller and an associated digital frame display, it would have been obvious to a POSITA, as of the earliest filing date of the '562 Patent, that the art space controller and associated digital frame display could be implemented in a single computer system, such as Jacklin's digital picture frame or the Stylistic Tablet." Johnson ¶1568. As I explained in Section XII.C, Jacklin is a digital picture frame, shown for example below:

Fig. 1



2575. As I explained in Section XII.M, Stylistic Tablet is a tablet computer device, shown for example below.

2576. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> Moreover, a POSITA, as of the earliest filing date for the ’562 Patent, would have been motivated to combine Jacklin’s digital picture frame or the Stylistic Tablet

> with Muoio's client-server system to provide a digital art display frame to improve the efficiency of the art distribution system by implementing the art space controller and associated digital frame display into a single apparatus. For example, in this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the apparatus containing the art display that displays the images distributed by Muoio's art distribution system, and its associated art space controller. A POSITA would have been motivated to make this combination based on the teachings of Jacklin and/or Stylistic Tablet of a frame apparatus containing a display and a controller for controlling the display of images on the display.

Johnson ¶1571.

2577. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2578. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio, but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2579. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display

devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead, Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities), Jacklin at 6:1-7:22, or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2580. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2581. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to

cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

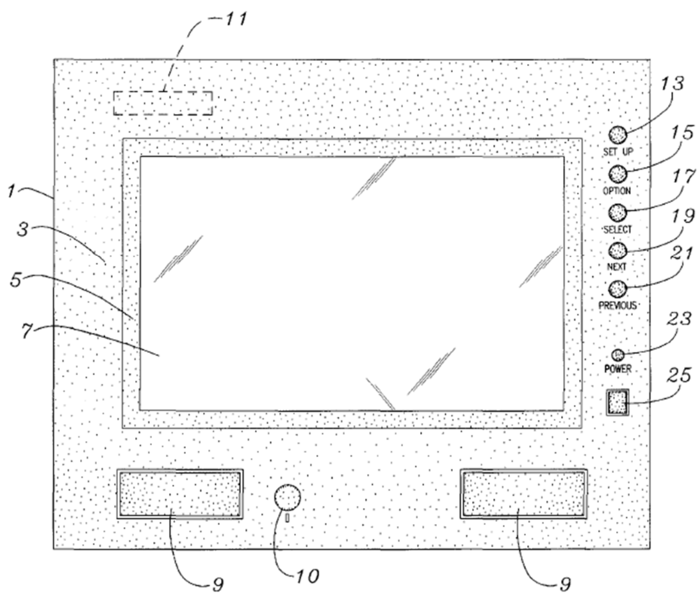
2582. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ii. Claim [1.a] said display screen; [1.b] a central processing unit; [1.c] a video controller configured to control display of said content on said display screen; [1.d] a communications interface configured to communicate with said server system via said communications network;

2583. Dr. Johnson asserts that Muoio alone or combination with Jacklin or Stylistic Tablet discloses these elements. Johnson ¶¶1463-1468, 1473-1476, 1573-1584. However, as I have explained, the art space controller that Dr. Johnson relies on is a separate device from the display device in Muoio, and Muoio discloses nothing regarding the structure of the display device 605. Thus, Muoio does not disclose its display device has a display device disclosed as having a central processing unit, nor a communication interface configured to communicate via a communications network, nor memory comprising computer readable instructions for controlling the operation of said display device.

2584. Dr. Johnson asserts that Jacklin or Stylistic Tablet could be used to provide display devices with explicitly disclosed memory and processors, but, again, Dr. Johnson provides no compelling motivations to combine Muoio with either Jacklin or Stylistic Tablet. As I explained in Section XII.C, Jacklin is a digital picture frame, shown for example below:

Fig. 1



2585. As I explained in Section XII.M, Stylistic Tablet is a tablet computer device, shown for example below.

2586. Dr. Johnson asserts a POSITA would be motivated to combine either Jacklin or Stylistic Tablet with Muoio for the following reasons:

> Moreover, a POSITA, as of the earliest filing date for the ’656 Patent, would have been motivated to combine Jacklin or Stylistic Tablet with Muoio’s client-server

> system to provide a digital art display frame to simplify the architecture of the art distribution system by implementing the art space controller and associated digital frame display into a single apparatus, such as Jacklin's digital picture frame or Stylistic Tablet. In this combination, Jacklin's digital picture frame or Stylistic Tablet serves as the device that displays the images distributed by Muoio's art distribution system. The combination is a simple substitution of one known element for another to obtain predictable results.

Johnson ¶1461.

2587. Dr. Johnson also states: "A POSITA, as of the earliest filing date of the '656 Patent, would have understood that the CPU of Jacklin's digital picture frame or processor of Stylistic Tablet would take the function of the processor in the art space controller and would have been motivated to make this combination for the reasons provided above," Johnson ¶1468, and "A POSITA would have recognized, as of the earliest filing date of the '656 Patent, that the operating system software of Muoio, Jacklin, and Stylistic Tablet each comprise a set of computer readable instructions that control the operation of the display device. A POSITA would have understood that execution of these instructions by the processor in each device would cause the device to carry out corresponding functions, such as the display of image data." Johnson ¶1475.

2588. The above is not a motivation to combine. All Dr. Johnson states is that, since Jacklin's digital picture frame and the Stylistic Tablet both have displays and controllers/processors, they could be swapped in place of Muoio's display devices 605.

2589. But Dr. Johnson is merely stating that Jacklin or Stylistic Tablet *could* replace the display devices in Muoio, but does not explain *why* a POSITA *would* have been *motivated* to use Jacklin's digital picture frame or the Stylistic Tablet instead of Muoio's display devices. Beyond stating that the display devices *could* be substituted out for the Stylistic Tablet, Dr. Johnson offers no arguments why a POSITA would have been motivated to make such a substitution, which is especially critical given that the purpose of Muoio's system is to display digital reproductions of art in a building, which generally would be done using larger displays as already disclosed in

Muoio. In other words, why would a POSITA have been motivated to display artwork using a smaller device such as the Stylistic Tablet in Muoio's system? Dr. Johnson provides no arguments concerning this issue.

2590. As shown in Figure 6 of Muoio above, the Muoio architecture was intricate, with each component operating according to specific functions. For example, the art server 601 includes "a database of bitmaps for the images that are currently specified in a play list," the play lists are provided to the art space controllers 603 via an art administration application 602 executed by the art server, and the art space controllers 603 "control the display of the play list on the display devices." Muoio at 6:23-29. To use Jacklin's digital picture frame or the Stylistic Tablet instead, Jacklin's digital picture frame (which is already disclosed as including its own programmed functionalities Jacklin at 6:1-7:22) or the Stylistic Tablet would have to be specially programmed to integrate into Muoio's system, such as to be able to receive the bitmap play lists provided by the art server and display them accordingly, and to be controllable using the user control point devices. This would also potentially require reconfiguration of the art server to be able to communicate with Jacklin's digital picture frame or the Stylistic Tablet.

2591. Also, there were likely practical considerations relevant at the time when choosing the architecture of Muoio. For example, use of the art space controllers may have been chosen due to practical connection issues. Hard-wired connections would have been more common at the time, and, since the point of Muoio was to mimic the display of artwork distributed throughout different rooms of a home or office using digital displays, Muoio at 1:65-67; 3:35-65, the art space controllers may have been chosen so that they could be conveniently placed in a room for use of a hard-wire connected between the art space controller and the art server. This would have allowed

for effective cord management, both between the art space controllers and the art server, and between the art space controllers and the display devices.

2592. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2593. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iii. Claim [1.e] a memory comprising a unique identifier for said apparatus;

2594. For this element, Dr. Johnson merely refers back to his analysis regarding claim 1 of the '930 Patent, and states that "Muoio, alone or in combination with Jacklin or Stylistic Tablet, in combination with Nishiyama, Elgamal, or RFC 2246 discloses a memory comprising a unique identifier for said apparatus." Johnson ¶1585.

2595. Dr. Johnson admits that Muoio does not disclose or suggest storing in memory of a display apparatus a unique identifier for said digital display apparatus. Johnson ¶1323.

2596. Dr. Johnson then attempts to combine Nishiyama with Muoio. As I explain throughout this report, Dr. Johnson ignores that Muoio and Nishiyama are in entirely different

fields. The USPTO primary classification for Muoio is 345/1.1. Class 345[208] is *Computer Graphics Processing and Selective Visual Display Systems*. Subclass 1.1 is *Plural Display Systems*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[209] The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[210] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

2597. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Muoio, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

2598. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Johnson ¶¶1326-1328. Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

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[208] https://www.uspto.gov/web/patents/classification/uspc345/sched345.htm

[209] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

[210] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

2599. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

2600. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶1327. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *see, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier."), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

2601. For Dr. Johnson's combination of Muoio with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Muoio with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

2602. As I have explained, SSL and TLS were both intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[211] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[212] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2603. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2604. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

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[211] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[212] *Id.*

2605. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2606. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2607. Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Also, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2608. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to

cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2609. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

iv. Claim [1.f] computer readable instructions different from said content for controlling the operation of said apparatus, and a version identifier for said computer readable instructions,

2610. For this element, Dr. Johnson refers back to his analysis regarding Claim 1 of the ’656 Patent and Claim 1 of the ’930 Patent. Johnson ¶¶1587, 1330-1332.

2611. Dr. Johnson, without citing any evidence, asserts that it would be obvious for the art space controllers of Muoio (which again are not digital display apparatuses) to store a current version of onboard software because the art space controllers have software. Dr. Johnson states:

> Furthermore, it would have been obvious to a POSITA as of the earliest filing date of the ’930 Patent to store a current version of the operating system or onboard software of the art space controller to allow the system to work properly. It was well known to a POSITA that software, such as operating system software or other onboard may have different versions that are released over time as the software is updated. A version currently stored in the art space controller is the current version. A POSITA would have also recognized that the current version may be the latest version, and a POSITA would have been motivated to store the latest version of the onboard software in the art space controller to provide it with the latest feature set and bug fixes.

Johnson ¶1331.

2612. Dr. Johnson thus assumes that Muoio is meant to support software updates, which are not disclosed in Muoio. Dr. Johnson then further assumes that Muoio could facilitate software updates by storing a version number, which is also not disclosed in Muoio. In addition to basing assumptions upon assumptions, Dr. Johnson also ignores other ways software can be updated including:

a. Simply installing the latest version over whatever is already on the device, regardless of what version it is; and

b. Simply using the date stamp of the file and updating if something with a later date stamp is available.

2613. Dr. Johnson then combines, in the alternative, each of Criss and Kottapurath with Muoio (and Jacklin or Stylistic Tablet) to attempt to meet this claim element. Johnson ¶1591-1592. However, it should be also noted that neither Criss nor Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2614. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Muoio. Criss is related to managing cellular networks, not to the field of consumer home/office display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2615. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

2616. This claim requires the at least one digital picture frame obtain operating system updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the frame device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit.

2617. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶1232-1233, 1592. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL),

bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

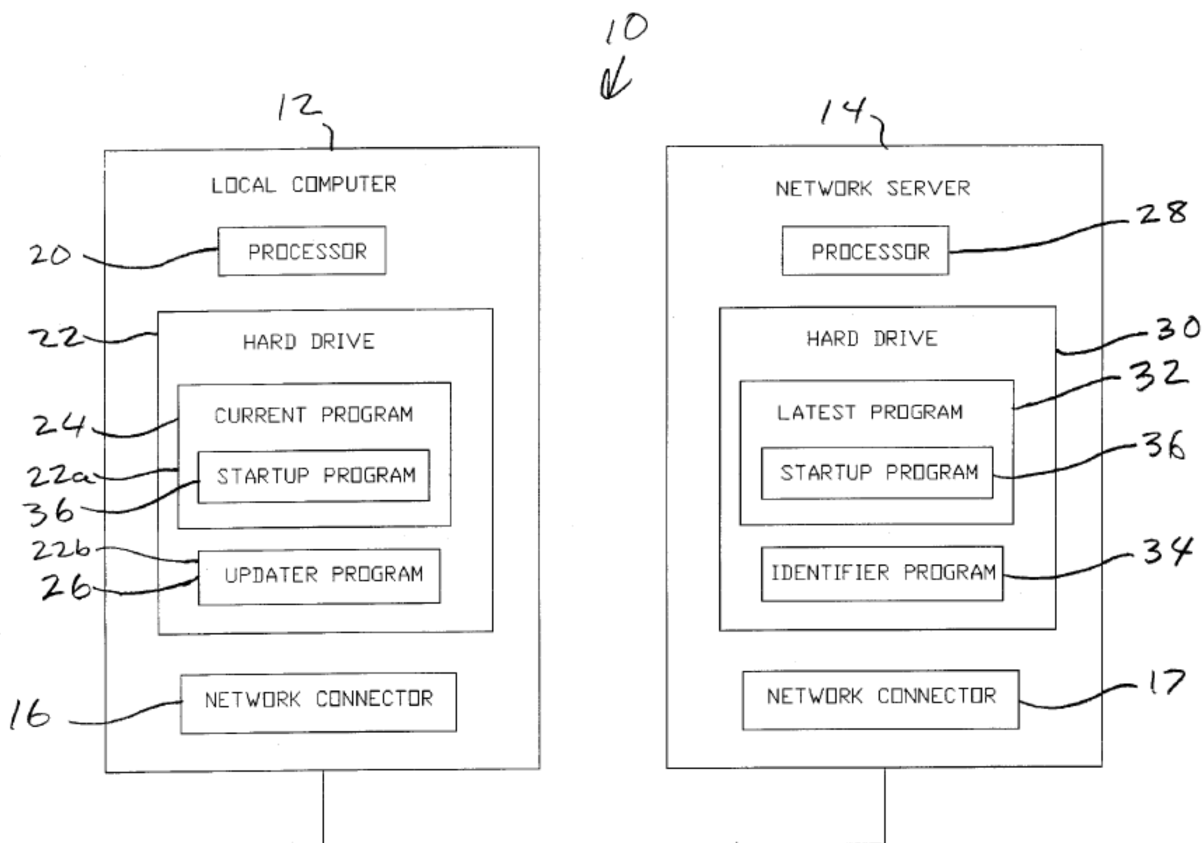

Fig. 1

2618. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

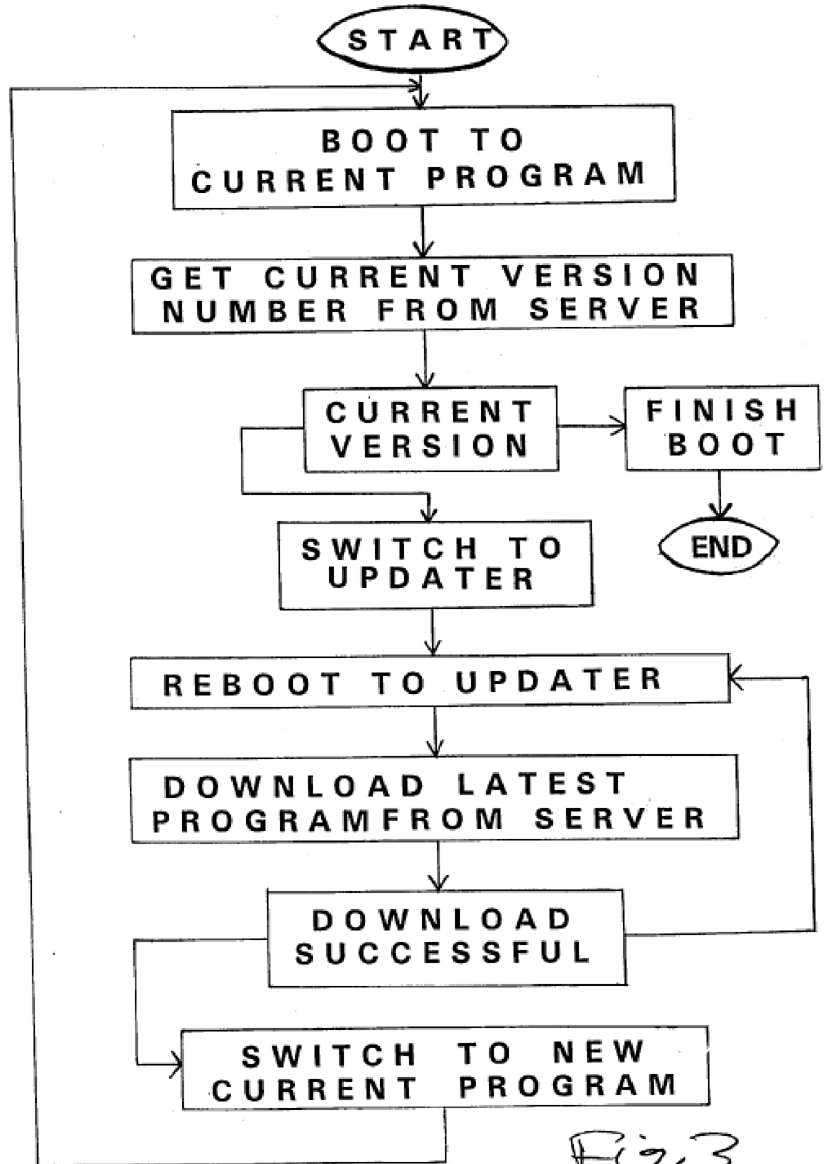

Fig. 3

2619. Dr. Johnson then states: "a POSITA would have been motivated to combine the software update and replacement functions described in Criss or Kottapurath with the client-server system in Muoio to provide art space controller software updates through a central art server system. Moreover, replacing the current version of the operating system software stored in said memory with an updated version is also obvious to try because there are two finite choices for such software updates—incremental patches or a full replacement—and it would have been

obvious to a POSITA to try both." Johnson ¶1234, ¶1593. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's art space controllers specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controllers somehow to obtain software updates from the local art server. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2620. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss or Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Muoio.

2621. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

v. Claim [1.g] said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network;

2622. For this element, Dr. Johnson refers to his analysis with respect to claim 1 of the '656 Patent, which in turn, also refers to his analysis with respect to claim 2 of the '573 Patent and claim 1 of the '930 Patent and their recitations regarding automatic communications. Johnson ¶¶1595, 1477.

2623. As I have explained regarding, Muoio does not disclose or suggest this. In Muoio, a portion relied upon by Dr. Johnson states:

> FIG. 17 is a flow diagram of the processing of an art display module. The art display module overlaps the displaying of an image with retrieving from the art server of the next image to be displayed. The module continually displays the images in the play list by displaying the first image in the play list after the last image is displayed. The art display module is provided with a display list. *In step 1701, the module*

> *selects the first image in the display list. In step 1702, the module retrieves the selected image from the art server.* In steps 1703-1707, the module loops displaying the images in the play list at the specified intervals. *In step 1703, the module displays the last retrieved image. In step 1704, the module selects the next image in the display list. In step 1705, the module retrieves the selected image from the art server.* In step 1705, the modules pauses for the requisite interval or until a user touches the panel. In step 1706, if the user touches the panel, then the module continues at step 1707, else the module loops to step 1703 to select and display the last retrieve image. In step 1707, the function displays the information relating to the current image and then loops to step 1705 to pause. The display of the information corresponds to FIG. 1. In one embodiment, the module may cache the images so that each image of a play list only needs to be retrieved once.

Muoio at 9:47-10:3 (emphasis added).

2624. First, as shown above, it is Muoio's art space controllers that performs this process, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2625. Also, the art server *pushes* play lists to art space controllers independent of any request:

> In step 1802, the module displays the user interface for the user control point device. In step 1803, if the user indicated to assign a new play list the space, then the module continues at step 1804, else the module returns. In step 1804, the module notifies the *art server* to change the play list assignment for the space. **The *art server* then sends out an event to notify the art space controllers that the play list has changed.**

Muoio at 10:7-14 (emphasis added).

2626. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller, and thus Muoio does not disclose a display device that automatically initiates communications. And again, the art space controller only retrieves each image ***after it has already received the play*** list, since Muoio further states that

the "art display module is provided with a display list," Muoio at 9:52-53, which occurs prior to retrieving the first image in the display list. Muoio at 9:53-56.

2627. Since Muoio only discloses that separate art space controllers retrieve images after play lists are pushed to the art space controllers, Muoio does not disclose a display device that automatically initiates communications and receives a set of image data in response to a request.

2628. Apparently recognizing that Muoio is deficient, especially in that Muoio does not disclose "upon connection to a power source and a communications source," Dr. Johnson attempts to combine Muoio with each of Criss, Kottapurath, and Kikinis. Johnson ¶1479-1485. First. Dr. Johnson states that it would be obvious that prerequisites such as having a connect power source and communications source would be needed before initiating a communications sessions. Johnson ¶1478. But it is simply having such connections that matters here, but the automatic nature of initiating the communications ***upon*** establishing those connections.

2629. It should be also noted that none of Criss, Kottapurath, and Kikinis are in the same field of endeavor as the Patents-in-Suit: personal display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing display devices required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated display device design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not

ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2630. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine Criss with Muoio. Johnson ¶1480. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. This is in an entirely different field than Muoio or the Patents-in-Suit. Criss is related to managing cellular networks, not to the field of consumer digital display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2631. Regardless, Criss describes a process in which a mobile device communicates with a host computer 30 that "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" A host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss, 7:32-46.

2632. Criss thus discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display

device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit. Muoio has the same problem, in that it discloses the art space controllers must request each specific identified image in a play list from the art server.

2633. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶1481. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

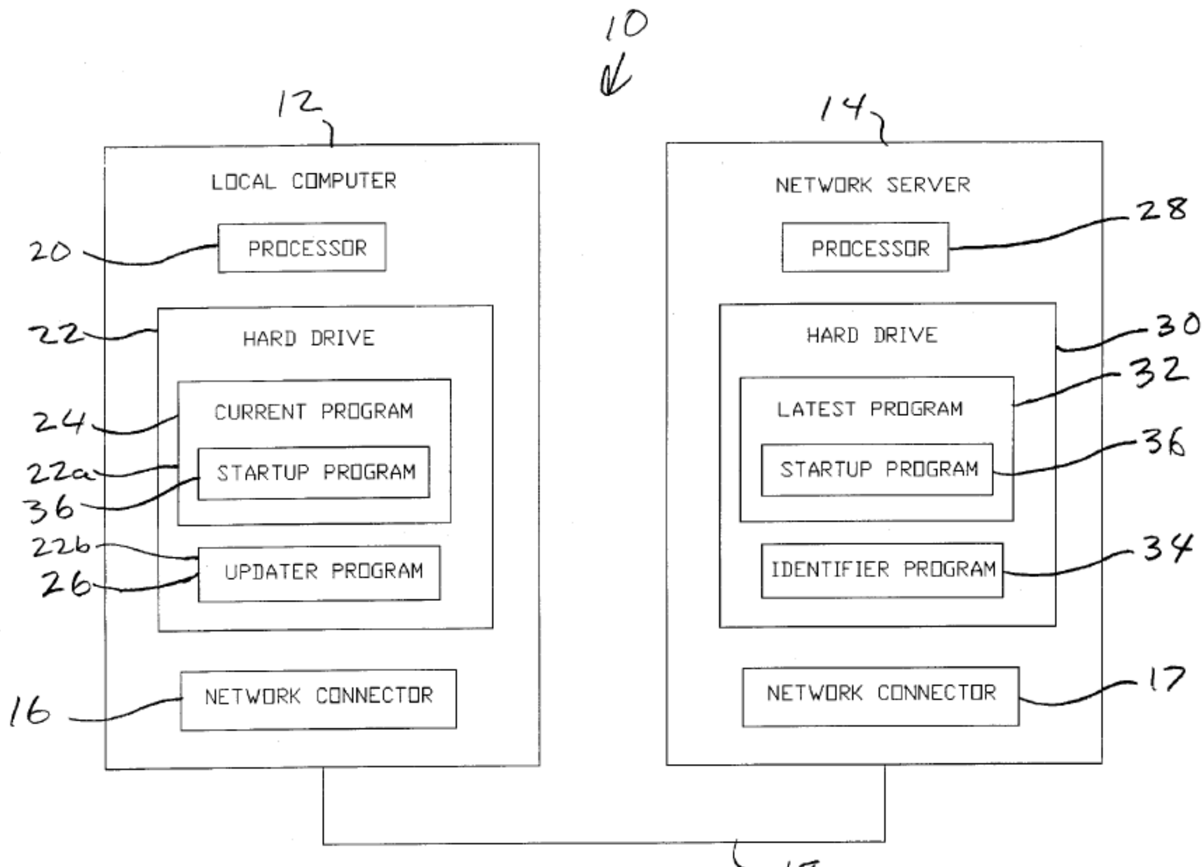

Fig. 1

2634. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

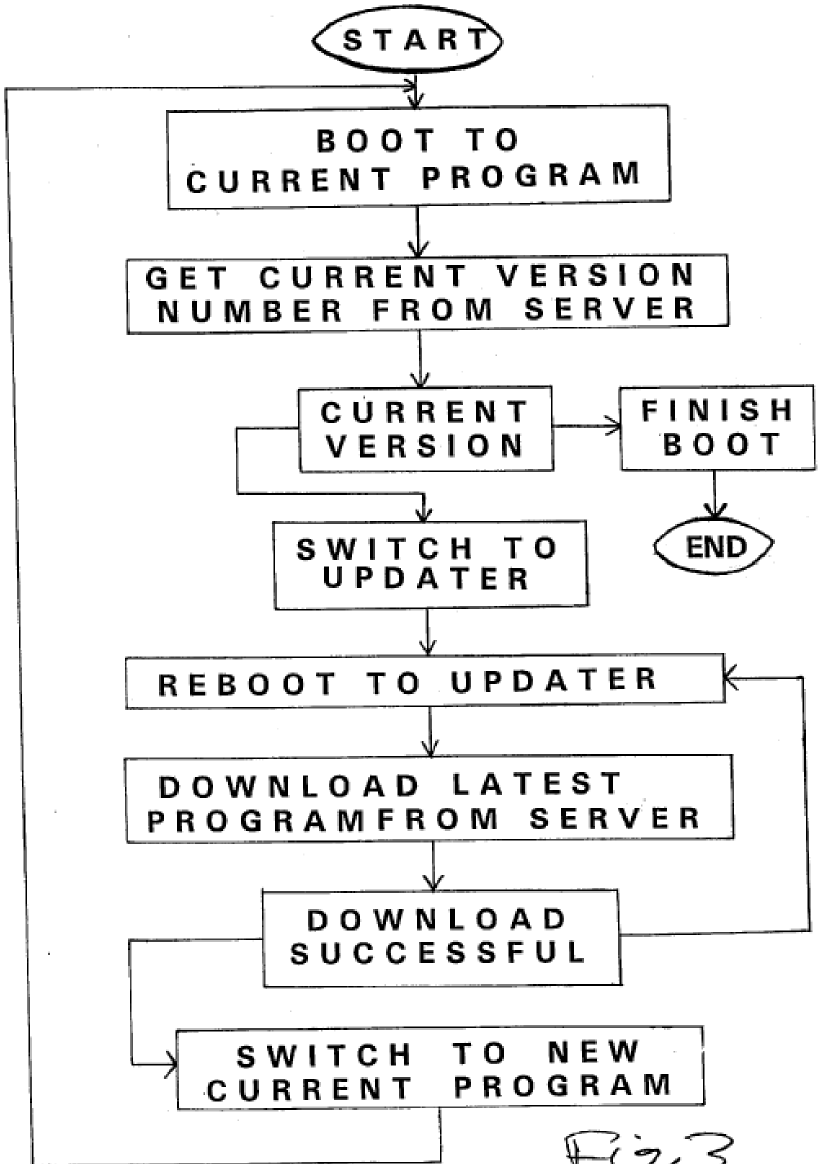

Fig. 3

2635. Dr. Johnson also asserts that Kikinis discloses this element, stating:

Kikinis discloses a service, including an apparatus and software, "that enables users who have purchased an Internet appliance such as a WEB phone, for example, to obtain third-party assistance in setting-up and configuring the device for successful operation." Kikinis at 4:22-27. "Such Internet appliances include any device that is used for accessing and operating on the Internet, or other types of switch-packet networks that may stand alone or be linked to the Internet. Examples are WEB phones, WEB TV's, Palm-top computers, Internet capable cell phones, Laptop computers, and so on." *Id.* at 4:43-48. When "a user plugs in a specific Internet appliance . . . and insures that all hardware and connections are correct . . . the user

> calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased. The appliance is then connected to server 21." *Id.* at 8:22-29. The server then communicates with the Internet appliance to perform set-up operations, which may include software updates. *Id.* at 8:41-60, 6:26-35.

Johnson ¶1482.

2636. First, Kikinis is not analogous art, as it deals with a process to set up telephones. Also, as shown above, Kikinis discloses that a device can call a 1-800 number to get assistance, but only when a user performs the call, or when a user gives permission for the device to perform the call. Kikinis thus does not disclose an automatic process. Dr. Johnson, recognizing this, essentially says that it would be "obvious that obtaining the user's permission could be omitted." Johnson ¶1483. There is no suggestion in Kikinis to omit how Kikinis is disclosed to operate, and Dr. Johnson appears to only state it would be obvious to do so based on hindsight and a need to try to reach this claim element, neither of which is a proper motivation to modify Kikinis.

2637. Dr. Johnson then states: "A POSITA would have been motivated to incorporate the teachings of any one of Criss, Kottapurath, or Kikinis with Muoio," and that "POSITA would have understood that by automatically initiating communication with the art server, e.g., when the display device is powered on and connected to the Internet, the device can more quickly receive and begin displaying image data and other information, while minimizing the need for user intervention." Johnson ¶1484. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's disclosure specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controller somehow to connect to a server and obtain software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2638. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss, Kottapurath, or Kikinis (although as indicated above, I do not agree that they necessarily could be combined), but does not provide sufficient reasons for why a POSITA *would* attempt such modifications to Muoio, given that Muoio's system already has a working system that, for example, operates by the art server first pushing play lists out to art space controllers.

2639. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

vi. Claim [1.h] sending by said apparatus said unique identifier to said server system;

2640. For this element, Dr. Johnson merely refers back to his discussion of the '930 Patent, and states "Muoio alone or in combination with Criss, Kottapurath, or Kikinis discloses said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network." Johnson ¶1595.

2641. Again, Dr. Johnson admits that Muoio does not disclose or suggest storing in memory of a display apparatus a unique identifier for said digital display apparatus. Johnson ¶1323.

2642. Dr. Johnson then attempts to combine Nishiyama with Muoio. As I explain throughout this report, Dr. Johnson ignores that Muoio and Nishiyama are in entirely different fields. The USPTO primary classification for Muoio is 345/1.1. Class 345[213] is *Computer Graphics*

[213] https://www.uspto.gov/web/patents/classification/uspc345/sched345.htm

Processing and Selective Visual Display Systems. Subclass 1.1 is *Plural Display Systems*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[214] The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[215] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

2643. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Muoio, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

2644. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Johnson ¶¶1326-1328. Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the

[214] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

[215] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

2645. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

2646. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶1327. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *see, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier."), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

2647. For Dr. Johnson's combination of Muoio with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Muoio with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

2648. As I have explained, SSL and TLS were both intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained

devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[216] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[217] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2649. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2650. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2651. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates

[216] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[217] *Id.*

would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2652. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup (page 882).

2653. Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Also, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2654. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2655. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

vii. Claim [1.i] sending by said apparatus said version identifier to said server system;

2656. For this claim limitation, Dr. Johnson again, as in previous sections, asserts that Muoio could be combined with one of Criss or Kottapurath to provide software updates, including sending a version identifier to a server. Johnson ¶1596.

2657. Dr. Johnson, without citing any evidence, asserts that it would be obvious for the art space controllers of Muoio (which again are not digital display apparatuses) to store a current version of onboard software because the art space controllers have software. Dr. Johnson states:

> Furthermore, it would have been obvious to a POSITA as of the earliest filing date of the ’930 Patent to store a current version of the operating system or onboard software of the art space controller to allow the system to work properly. It was well known to a POSITA that software, such as operating system software or other onboard may have different versions that are released over time as the software is updated. A version currently stored in the art space controller is the current version. A POSITA would have also recognized that the current version may be the latest version, and a POSITA would have been motivated to store the latest version of the onboard software in the art space controller to provide it with the latest feature set and bug fixes.

Johnson ¶1331.

2658. Dr. Johnson thus assumes that Muoio is meant to support software updates, which are not disclosed in Muoio. Dr. Johnson then further assumes that Muoio could facilitate software updates by storing a version number, which is also not disclosed in Muoio. In addition to basing assumptions upon assumptions, Dr. Johnson also ignores other ways software can be updated including:

a. Simply installing the latest version over whatever is already on the device, regardless of what version it is; and

b. Simply using the date stamp of the file and updating if something with a later date stamp is available.

2659. Dr. Johnson then combines, in the alternative, each of Criss and Kottapurath with Muoio (and Jacklin or Stylistic Tablet) to attempt to meet this claim element. Johnson ¶¶1591-1592. However, it should be also noted that neither Criss nor Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2660. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Muoio. Criss is related to managing cellular networks, not to the field of consumer home/office display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2661. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

2662. This claim requires the at least one digital picture frame obtain operating system updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the frame device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit.

2663. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶1232-1233, ¶1592. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL),

bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

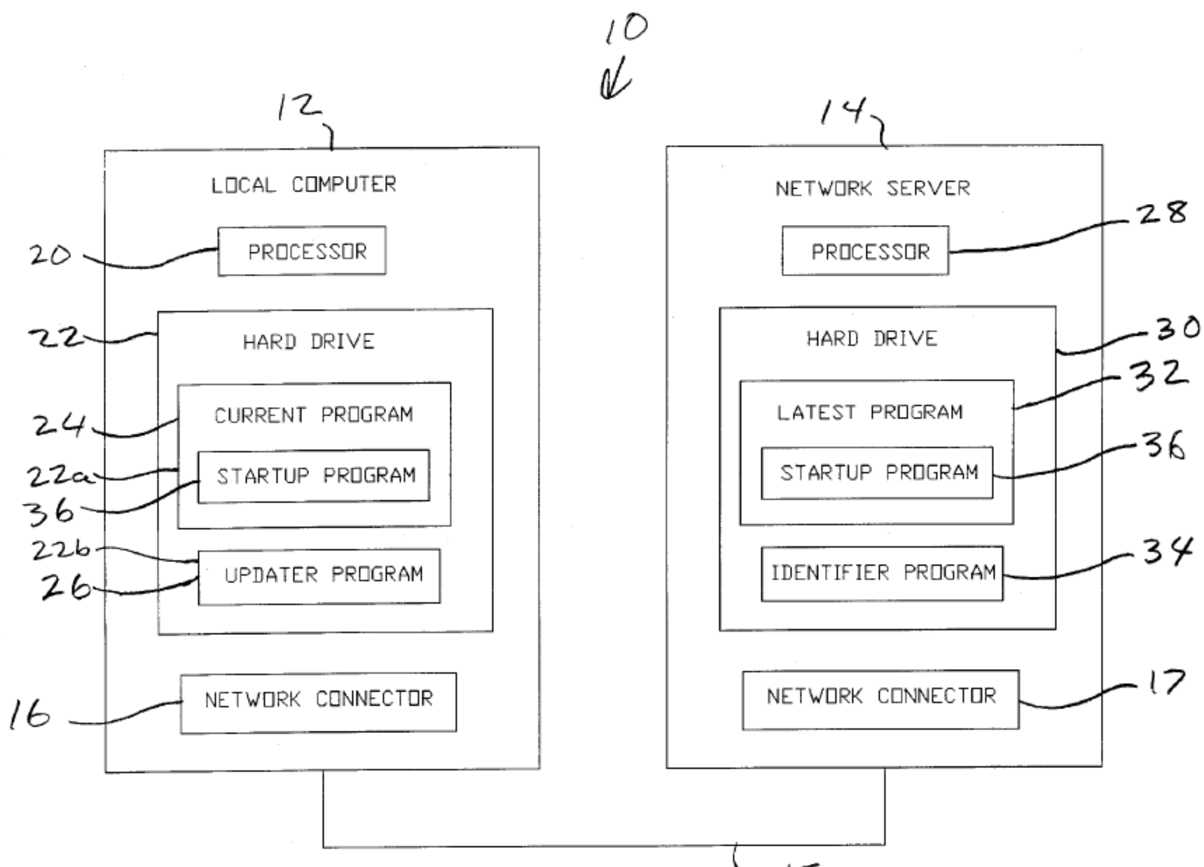

Fig. 1

2664. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

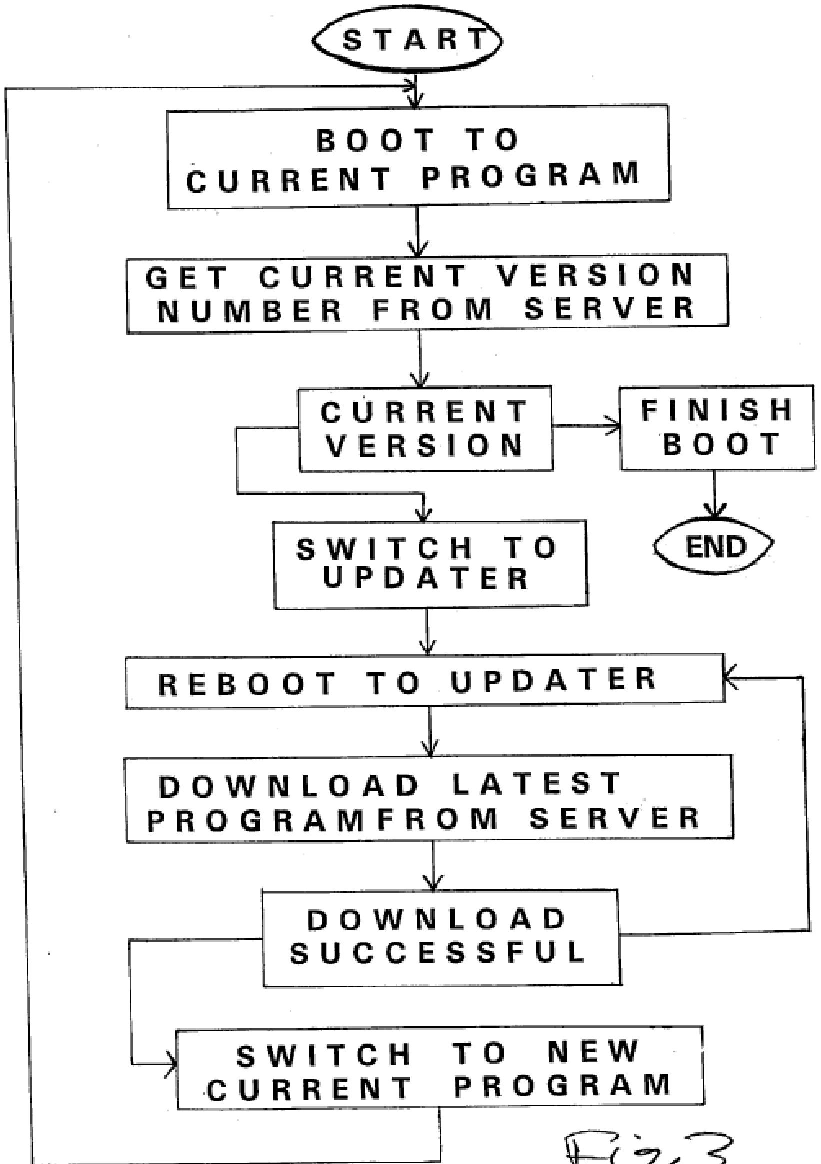

Fig. 3

2665. Dr. Johnson then states: "a POSITA would have been motivated to combine the software update and replacement functions described in Criss or Kottapurath with the client-server system in Muoio to provide art space controller software updates through a central art server system. Moreover, replacing the current version of the operating system software stored in said memory with an updated version is also obvious to try because there are two finite choices for such software updates—incremental patches or a full replacement—and it would have been

obvious to a POSITA to try both." Johnson ¶1234, ¶1593. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's art space controllers specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controllers somehow to obtain software updates from the local art server. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2666. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss or Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Muoio.

2667. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

viii. Claim [1.j] prompting by said apparatus a user of said apparatus to create an account at said server system;

2668. For this element, Dr. Johnson merely refers back to his analysis regarding claim 6 of the '930 Patent, and asserts that Muoio in combination with Hoyle, discloses said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: prompting by said apparatus a user of said apparatus to create an account at said server system. Johnson ¶1602.

2669. As I explained in Section XIII.b, Dr. Johnson admits that Muoio does not disclose the displaying an account initialization message but asserts it would be obvious to do so based on Hoyle. Johnson ¶1387.

2670. I first note that I agree with Dr. Johnson that Muoio does not expressly disclose this claim limitation. I next note that Dr. Johnson asserts that Hoyle discloses that "a targeted

advertisement display system may be configured to display a message asking of the user would like to set up a new account." Johnson ¶1393 (citing Hoyle at 26:49-27).

2671. Even if one were to agree with Dr. Johnson that a POSITA *could* make this combination, Dr. Johnson provides no reason why a POSITA *would* modify Muoio. All Dr. Johnson points to is the fact that Hoyle discloses displaying an account initialization message when a user creates a new account. However, Dr. Johnson does not provide any reason why this would benefit Muoio. In fact, somehow having an art space controller in Muoio display an account initialization message makes no sense in the context of Muoio.

2672. As I explained in Section XIII.B, Muoio provides an open system in which art on any display device can be changed by any user. Although Dr. Johnson attempts to make it appear that user accounts would be needed in Muoio, such as because it may be desirable to lock people such as guests or visitors out of the system so that they cannot use the user interface to control play lists, Muoio includes no disclosure or suggestion of locking people out of the interface. Rather, since Muoio shows that a "guest room" can also include a display, art space controller, and UPC, then it would seem guests would also be encouraged to use the system. Muoio at 3:44-48. In fact, the Muoio artwork system was part of a project to apply the Muoio artwork system in Bill Gates' house. Evidence shows that visitors to Bill Gates' house had free reign to change the artwork without having to be authenticated.[218]

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[218] https://www.eteknix.com/bill-gates-mansion-has-some-secrets/ ("On arrival at the Gates household, you'll be handed a little pin. his pin interacts with sensors built into the house, in turn, it then tracks your movement throughout the entire complex." "Many of the paintings in the house are digital, he has roughly $80,000 dollars of displays that then connect back to a $150,000 server farm. The server farm then has a nearly unlimited supply of artwork for ***you*** to switch to" (emphasis added); https://www.archute.com/bill-gates-house/ ("Unlike most houses that display actual paintings or art, Bill Gates's house features computer screens on the walls that display art and paintings. It is estimated that these wall screens are worth at least $80,000, and the art is stored on

2673. Also, it would also be extremely user-unfriendly to require someone to log in to an account every time they tried to use one of the user control points. Further, there is no disclosure in Muoio that display devices or art space controllers are specific to users. Rather, they are specific to rooms. Thus, prompting users to create an account by displaying an account initialization message in Muoio is completely illogical.

2674. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ix. Claim [1.k] receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system; [1.l] updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions;

2675. For these elements, Dr. Johnson refers back to his analysis regarding software updates with respect to the ’930 and ’656 Patents, and states Muoio in combination with Criss or Kottapurath, discloses said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system. Johnson ¶¶1603-1604.

2676. First, I note that the art space controllers and the display devices of Muoio are separate devices, as I explained in Section XIII.b I do agree with Dr. Johnson that Muoio does not disclose any method or process to obtain an update for software.

devices worth approximately $150,000. ***As a guest***, you can display your favorite pieces on these screens.” Emphasis added)); https://economictimes.indiatimes.com/nation-world/peek-inside-bill-gates-124-million-mansion-xanadu-2-0/rotational-artwork/slideshow/56019674.cms (“***Anyone*** can make the screens display their favorite paintings or photographs, which are stored on devices worth $150,000.”) (emphasis added).

2677. Dr. Johnson then combines, in the alternative, each of Criss and Kottapurath with Muoio to attempt to meet this claim element. Johnson ¶¶1229-1243. However, it should be also noted that neither Criss nor Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2678. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than Muoio. Criss is related to managing cellular networks, not to the field of consumer home/office display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2679. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 then "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

2680. This claim requires the at least one digital picture frame obtain operating system updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the frame device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit.

2681. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶1232-1233. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL),

bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

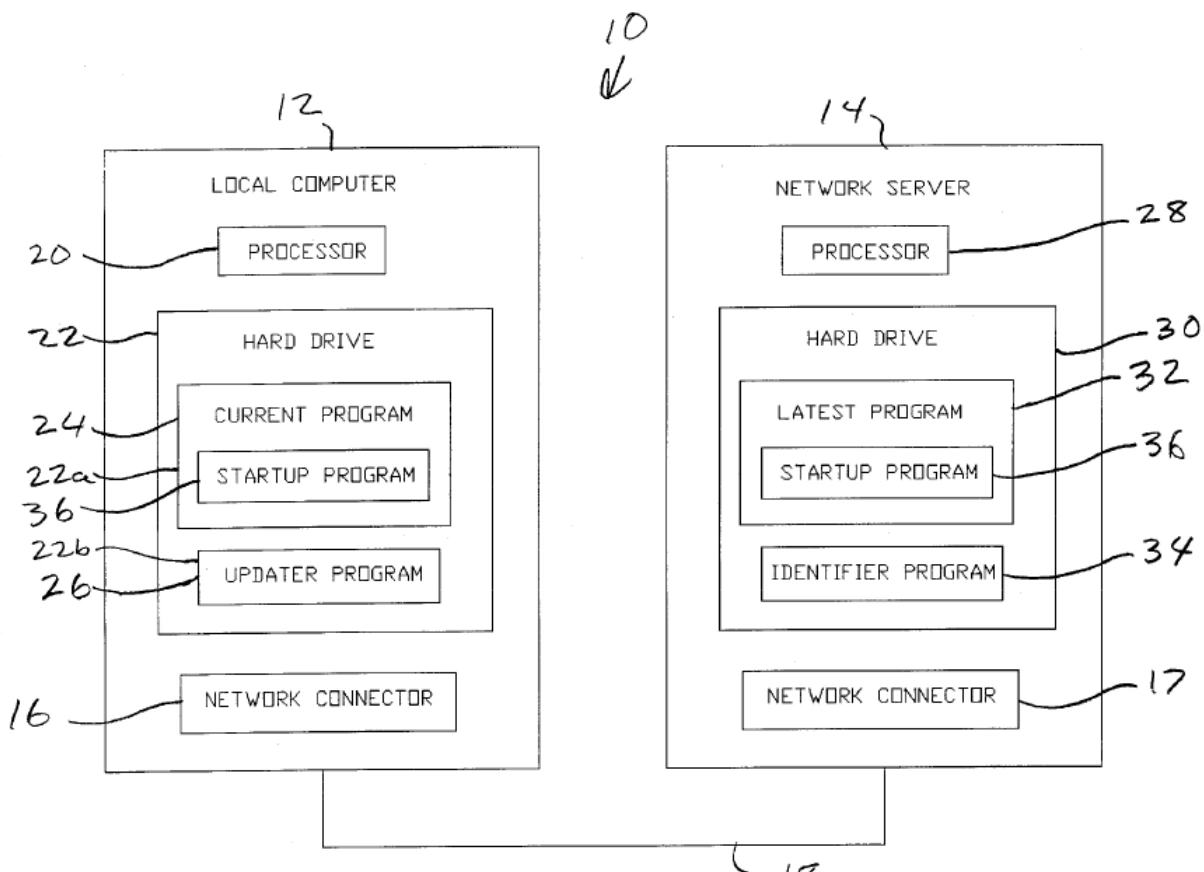

Fig. 1

2682. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

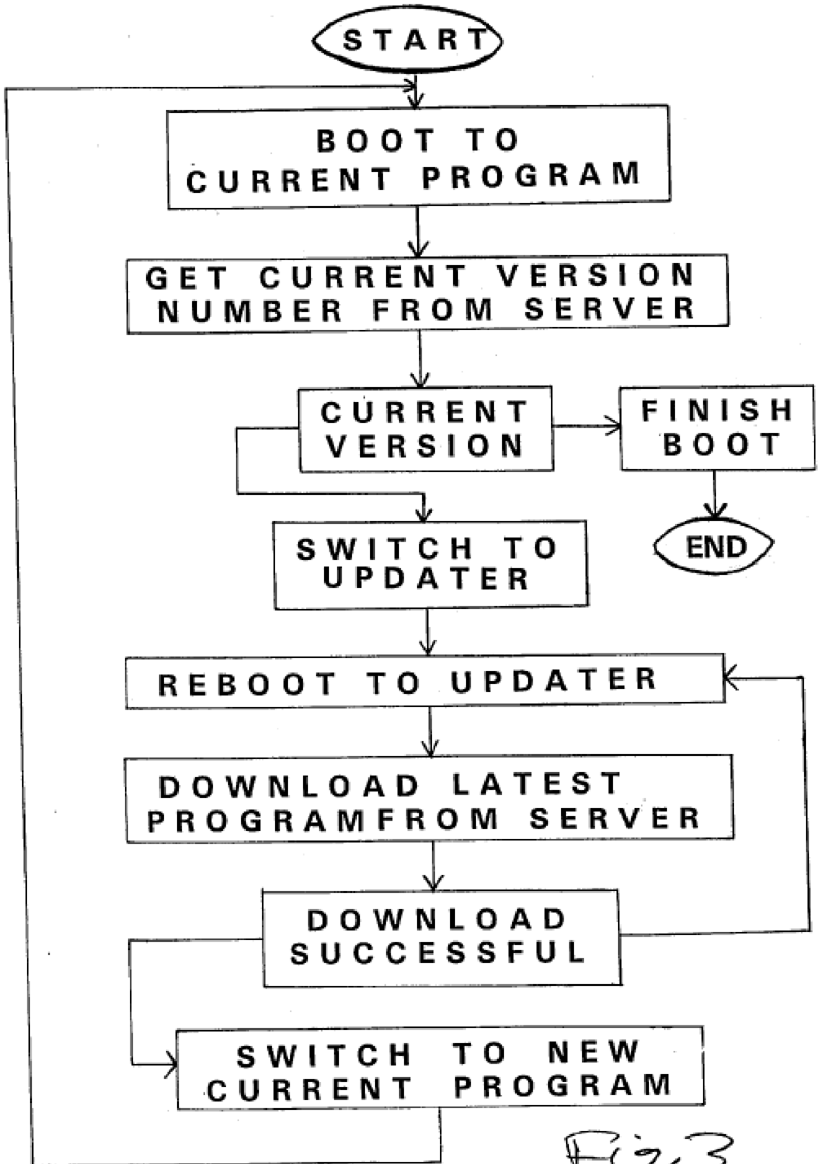

Fig. 3

2683. Dr. Johnson then states: "a POSITA would have been motivated to combine the software update and replacement functions described in Criss or Kottapurath with the client-server system in Muoio to provide art space controller software updates through a central art server system. Moreover, replacing the current version of the operating system software stored in said memory with an updated version is also obvious to try because there are two finite choices for such software updates—incremental patches or a full replacement—and it would have been

obvious to a POSITA to try both." Johnson ¶1234. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's art space controllers specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controllers somehow to obtain software updates from the local art server. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2684. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss or Kottapurath (although as indicated above, I do not agree that they necessarily could be combined) but does not provide reasons for why a POSITA *would* attempt such modifications to Muoio.

2685. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

x. Claim [1.m] receiving by said apparatus updated content from said server system;

2686. For this element, Dr. Johnson alleges that Muoio discloses that its display device receives content such as images from the art server. Johnson ¶¶1016-1020.

2687. Muoio does not disclose or suggest images to display devices. In Muoio, a portion relied upon by Dr. Johnson states:

> FIG. 17 is a flow diagram of the processing of an art display module. The art display module overlaps the displaying of an image with retrieving from the art server of the next image to be displayed. The module continually displays the images in the play list by displaying the first image in the play list after the last image is displayed. The art display module is provided with a display list. In step 1701, the module selects the first image in the display list. In step 1702, the module retrieves the selected image from the art server. In steps 1703-1707, the module loops displaying the images in the play list at the specified intervals. In step 1703, the module displays the last retrieved image. In step 1704, the module selects the next image in the display list. In step 1705, the module retrieves the selected image from the art server. In step 1705, the modules pauses for the requisite interval or until a user touches the panel. In step 1706, if the user touches the panel, then the module

> continues at step 1707, else the module loops to step 1703 to select and display the last retrieve image. In step 1707, the function displays the information relating to the current image and then loops to step 1705 to pause. The display of the information corresponds to FIG. 1. In one embodiment, the module may cache the images so that each image of a play list only needs to be retrieved once.

Muoio at 9:47-10:3 (emphasis added).

2688. First, as shown above, it is Muoio's art space controllers that performs this process, not the display devices; the art space controllers contain the "art display module" indicated as performing the steps of the process quoted above. Muoio at 7:27-38, FIG. 9. Consequently, Muoio does not disclose a display device that automatically initiates communications with a server system.

2689. Also, the art server *pushes* play lists to art space controllers independent of any request:

> In step 1802, the module displays the user interface for the user control point device. In step 1803, if the user indicated to assign a new play list the space, then the module continues at step 1804, else the module returns. In step 1804, the module notifies the *art server* to change the play list assignment for the space. **The *art server* then sends out an event to notify the art space controllers that the play list has changed.**

Muoio at 10:7-14 (emphasis added).

2690. Thus, the *art server* initiates the sending of the play list to the art space controller, and not in response to a request from the art space controller, as required in the claims. And again, the art space controller only retrieves each image ***after it has already received the play*** list, since Muoio further states that the "art display module is provided with a display list," Muoio at 9:52-53, which occurs prior to retrieving the first image in the display list. Muoio at 9:53-56.

2691. Since Muoio only discloses that separate art space controllers retrieve images after play lists are pushed to the art space controllers, Muoio does not disclose a display device that receives by said apparatus updated content from said server system.

2692. Further confusing Dr. Johnson's positions, Dr. Johnson cites to portions of Muoio that refer to a user being able to set up "queries" that allow the *art server* to download art from the remote mass storage device based on the query, such as a query for art by a particular artist. Johnson ¶1148-1149; *see also* Muoio at 4:27-41, 5:51-6:5, 8:54-9:25. For instance, see FIG. 5 showing an example query:

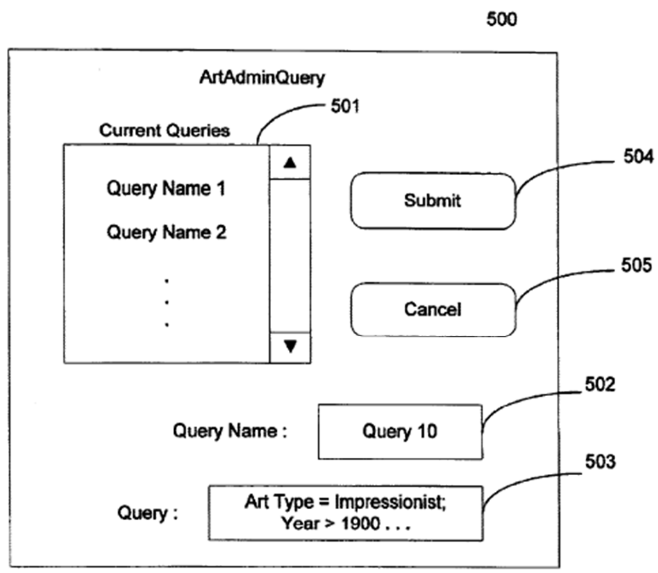

Figure 5

2693. However, these queries are not performed by a display device as required by the claim. Additionally, the Ceiva claims and specification clearly show that requesting images is entirely initiated by the display apparatus to avoid a user having to, e.g., "know how to navigate around the operating system and how to use the program utilized to obtain the data." See, e.g., '573 Patent at 3:32-37. In Muoio, queries require a user to know how to navigate and define queries using syntax average users would not be familiar with, such as "SQL." Muoio at 5:59-65. As such, a POSITA would not have looked to Muoio to solve the problems the Patents-in-Suit sought to address.

2694. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xi. Claim [1.n] displaying by said apparatus said updated content on said display screen.

2695. Dr. Johnson asserts that Muoio's display device can display images it receives. Johnson ¶1609-1612. However, since, as I explained above, Muoio does not disclose "receiving by said apparatus updated content from said server system," then Muoio also does not disclose this claim element of displaying ***said*** updated content.

2696. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xii. Claim [11.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to transmit metadata to said server system.

2697. Dr. Johnson asserts first asserts that Muoio discloses receiving a revised play list and transmitting the revised play list to the art server, and further asserts that this revised play list is metadata. Johnson ¶1647. But, as Dr. Johnson notes, the '562 Patent describes a metadata file "may contain, for example, a unique frame identifier, a relative clock time, a lights on clock tick, a lights out clock tick, a connect time, connection information, slide show information, log information, name server information, image information, an image display list, and error information." Johnson ¶1646 (quoting '562 Patent at 17:61-18:3). This is consistent with a definition of metadata: "Data about data. For example, the title, subject, author, and size of a file constitute metadata about the file."[219] Clearly, "metadata" is ancillary information such as small diagnostic or settings related to the display device in the '562 Patent and would not include more

[219] Microsoft Computer Dictionary 5th Edition published 2002 page 336.

substantial data elements such as revised play lists in Muoio. Those revised play lists are not meta data, but rather data.

2698. Apparently recognizing this deficiency of Muoio, Dr. Johnson again asserts that "Moreover, as discussed above in connection with claim 1 of the '562 Patent and claim 2 of the '930 Patent, each of Nishiyama, Elgamal, and RFC 2246 disclose sending a unique apparatus identifier to the server system to allow the server to authenticate the apparatus, which is also recognized by the '562 Patent as metadata." Johnson ¶1649.

2699. First, Claim 1, from which Claim 11 depends, already recites "said computer readable instructions comprising instructions for causing said apparatus to perform the steps of . . . sending by said apparatus said unique identifier to said server system." Therefore, in light of the principles of claim differentiation, Claim 11 must be referring to metadata that is data other than the unique identifier already recited as being sent to the server system in Claim 1.

2700. Also, as I explained with respect to Claim 1, Dr. Johnson attempts to combine Nishiyama with Muoio. As I explain throughout this report, Dr. Johnson ignores that Muoio and Nishiyama are in entirely different fields. The USPTO primary classification for Muoio is 345/1.1. Class 345[220] is *Computer Graphics Processing and Selective Visual Display Systems*. Subclass 1.1 is *Plural Display Systems*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[221] The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[222] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

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[220] https://www.uspto.gov/web/patents/classification/uspc345/sched345.htm

[221] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

[222] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

2701. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Muoio, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

2702. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Johnson ¶1326-1328. Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

2703. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

2704. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶1327. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *see, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier"), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

2705. For Dr. Johnson's combination of Muoio with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Muoio with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

2706. As I have explained, SSL and TLS were both intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[223] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive,

[223] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

both in terms of processor cycles and memory usage."[224] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2707. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2708. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2709. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

[224] *Id.*

2710. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup. *Using Windows 98*, page 882.

2711. Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Also, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2712. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2713. This claim is also valid for the same reasons as Claim 1.

2714. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

xiii. Claim [20.] The apparatus of claim 1 wherein said updated computer readable instructions comprise instructions for adding new functionality to said apparatus.

2715. For this claim limitation, Dr. Johnson again refers to and reuses his analysis regarding the '573 Patent and the '930 Patent, asserting that Muoio could be combined with one of Criss or Kottapurath to provide software updates. Johnson ¶¶1679-86.

2716. First, I note that the art space controllers and the display devices of Muoio are separate devices, as I explained in Section XIII.b I do agree with Dr. Johnson that Muoio does not disclose any method or process to obtain an update for software.

2717. Dr. Johnson then combines, in the alternative, each of Criss and Kottapurath with Muoio to attempt to meet this claim element. Johnson ¶¶1229-43. However, it should be also noted that neither Criss nor Kottapurath are in the same field of endeavor as the Patents-in-Suit: digital display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

2718. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely

different field than Muoio. Criss is related to managing cellular networks, not to the field of consumer home/office display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

2719. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" a host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

2720. This claim requires the at least one digital picture frame obtain operating system updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the frame device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular

data from the FTP server. Therefore, even if Criss were somehow combined with Muoio, this combination would not reach the claims of the Patents-in-Suit.

2721. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶1232-33. Kottapurath has USPTO classification 713/2: ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). This classification is actually slightly closer to Muoio than the other prior art cites. It is possible that a POSITA, as defined by Dr. Johnson, might have the knowledge to work with Kottapurath. However, this would require substantial work and undue experimentation. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

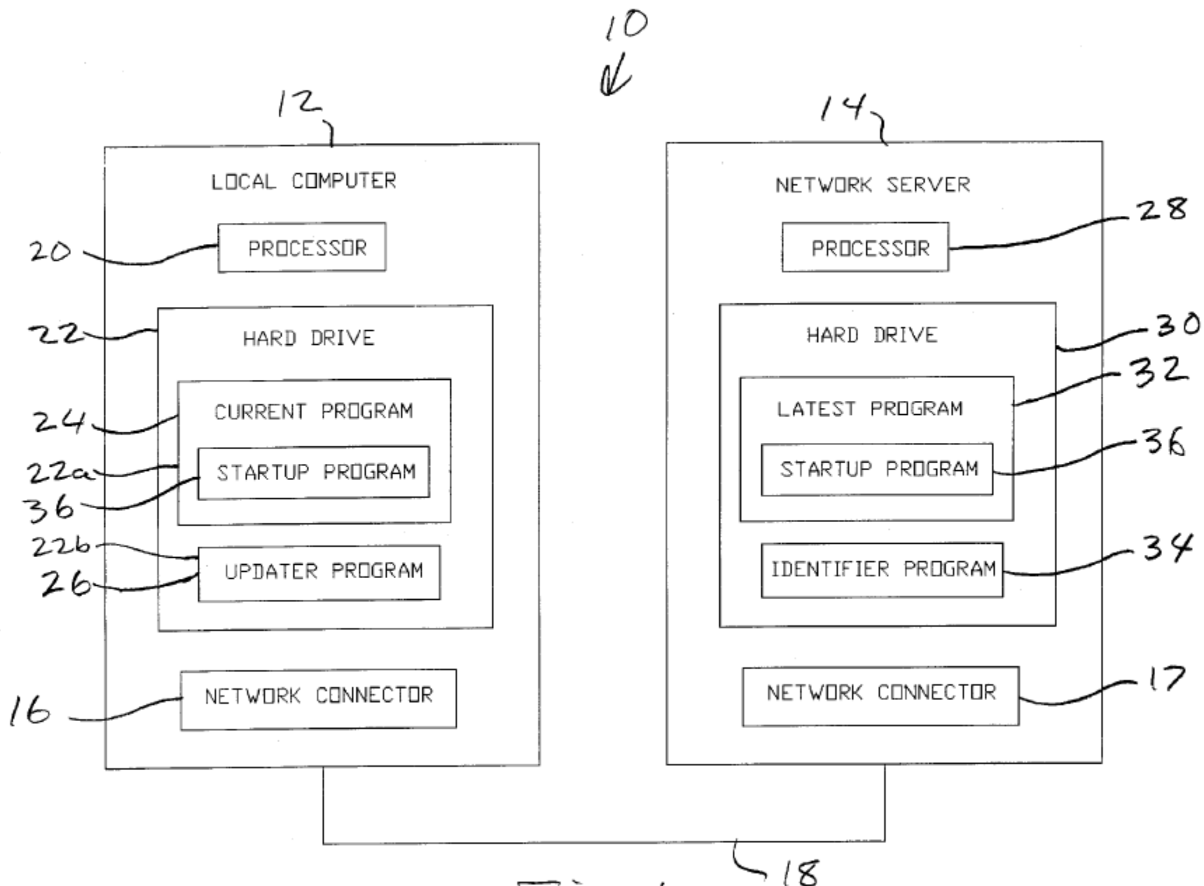

Fig. 1

2722. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Muoio. Figure 3 of Kottapurath shows the process:

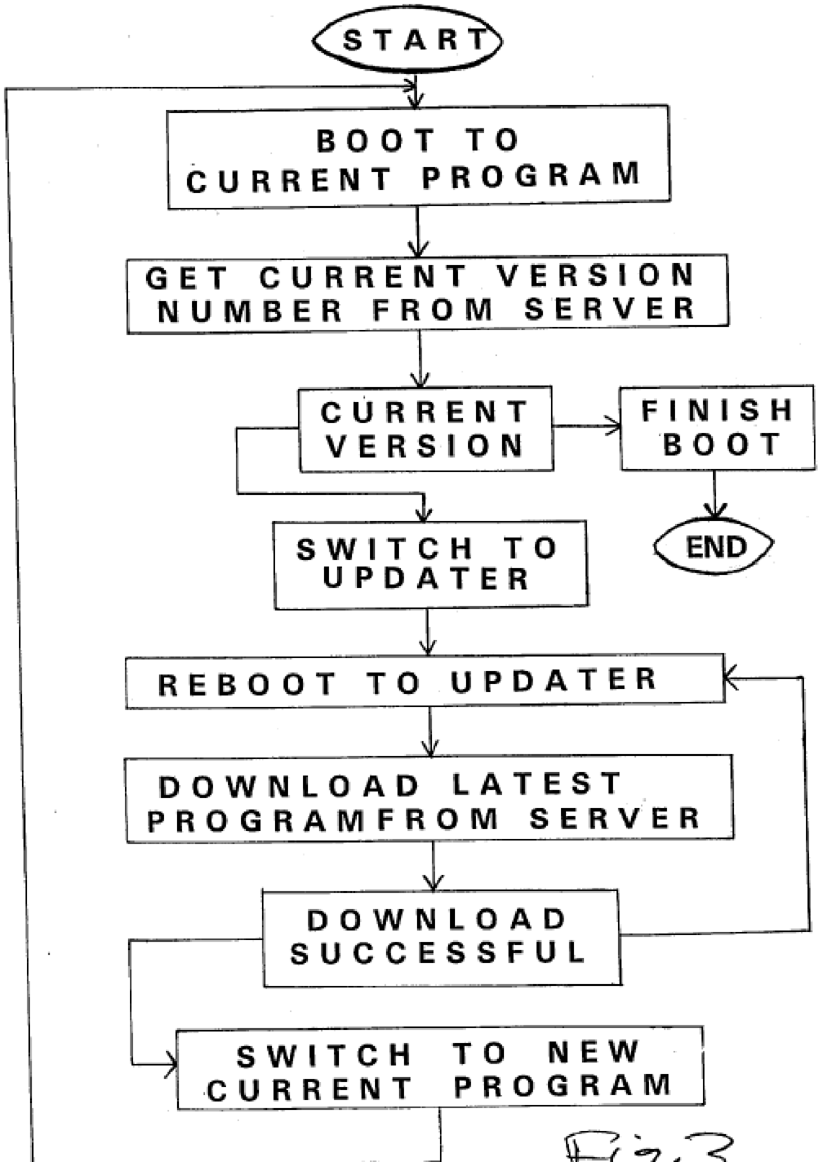

Fig. 3

2723. Dr. Johnson then states: "a POSITA would have been motivated to combine the software update and replacement functions described in Criss or Kottapurath with the client-server system in Muoio to provide art space controller software updates through a central art server system. Moreover, replacing the current version of the operating system software stored in said memory with an updated version is also obvious to try because there are two finite choices for such software updates—incremental patches or a full replacement—and it would have been

obvious to a POSITA to try both." Johnson ¶1234. Dr. Johnson's statements lack any real reasons why a POSITA would modify Muoio's art space controllers specifically, and instead appears to assert that one *could* theoretically modify Muoio's art space controllers somehow to obtain software updates from the local art server. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

2724. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically modify Muoio with one of Criss or Kottapurath (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications to Muoio.

2725. This claim is also valid for the same reasons as Claim 1.

2726. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

8. Claim 4 of the '562 Patent is valid in view of Muoio in combination with Hoyle, and Kikinis, and one of Nishiyama, Elgamal, or RFC 2246, and one of Criss or Kottapurath, alone or further in combination with one of Jacklin or Stylistic Tablet

i. Claim [4.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to receive location information of said apparatus from said server system.

2727. Dr. Johnson simply cites to portions of Muoio relating to that display devices can be within particular spaces, such as rooms of a home, and that the display devices can receive play list assignments, but these portions do not describe that display devices receive "location information" from a server system, as in Muoio, the art space controllers already know their locations. Muoio at 4:55-5:4, 6:45-50

2728. This claim is also valid for the same reasons as Claim 1.

2729. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

9. Claims 16 and 17 of the ’562 Patent are valid in view of Muoio in combination with Hoyle, and one of Elgamal or RFC 2246, and one of Criss or Kottapurath, alone or further in combination with one of Jacklin or Stylistic Tablet, alone or further in combination with Kikinis

i. Claim [16.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to transmit authentication information to said server system.

2730. Dr. Johnson refers back to his analysis of claim 2 of the ’573 Patent and claim 1 of the ’930 Patent, and again asserts that “Muoio in combination with Jacklin or Stylistic Tablet, and Elgamal or RFC 2246, discloses an authentication function configured to authenticate said at least one server system (the art server) before any data is exchanged between client and server.” Johnson ¶1660.

2731. Dr. Johnson admits that Muoio does not disclose authentication, but asserts that, because Muoio discloses the art space controllers and the art server, it “would have been obvious to modify Muoio to perform client-server authentication,” based on Elgamal’s or RFC 2246’s disclosures, “e.g., authenticating the server system before storing package data comprising image data and preferences in memory of the frame device.” Johnson ¶¶1188-95. Dr. Johnson asserts a POSITA would be motivated to implement authentication between the art space controllers and the art server because “[a] POSITA . . . would have been motivated to combine Muoio with the security and device authentication features, including the security handshaking prior to the transfer of data, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and authenticate the devices within Muoio’s client-server (art controller and associated display device—art server system) image distribution system.” Johnson ¶1363.

2732. But, as I explained in Section XIII.B.1, the art server and the art space controllers are within a local network, i.e., a local network in the same building, and do not communicate over the Internet. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67, 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
  - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).
  - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.
- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the

function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).

- This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2733. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

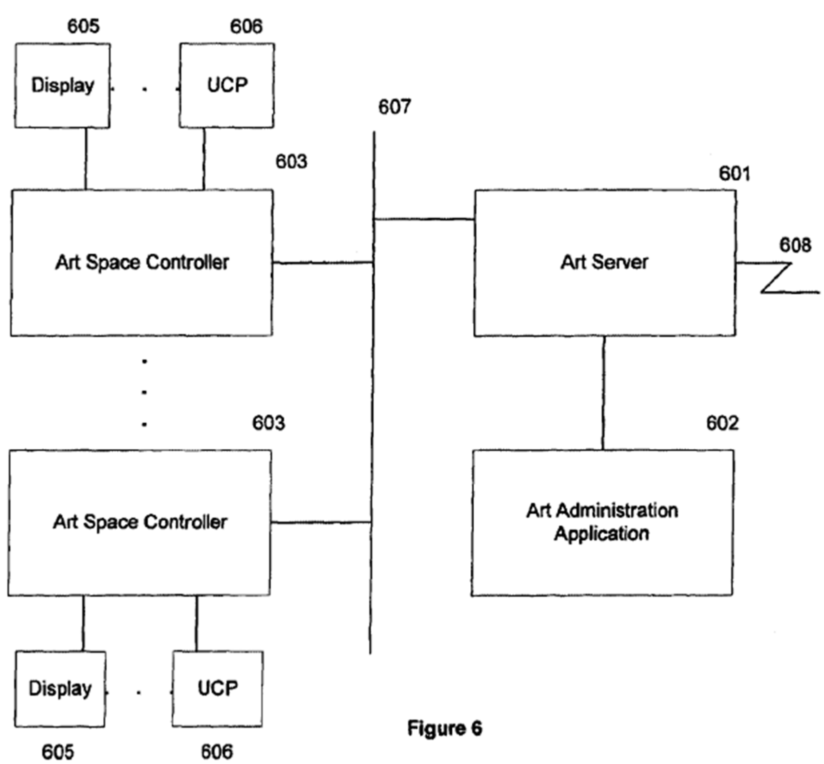

Figure 6

2734. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2735. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error. Dr. Johnson also asserts that a POSITA would be motivated to combine Muoio and Elgamal or RFC 2246 so that, in communications between Muoio's art space controllers and art server, communications are "prevent[ed] from being intercepted, altered, or otherwise compromised." Johnson ¶¶1197-1202.

2736. This is illogical. Elgamal and RFC 2246 emphasize they are directed to communications between entities over the public Internet. Elgamal at 1:63-2:22; RFC 2246 at 1. While some local networks could benefit from certain security protocols, Muoio's system is a fairly simple local system that has a small art space controller device pull images stored on a larger art server computer that acts as a storage device in a real-time manner (that is, as the art space controller reaches each image in a play list). Muoio at 9:47-10:3. A POSITA would see little need to implement security measures such as encryption and authentication between the art space controllers and the local art server.

2737. Although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Muoio. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶1189-94, 1361-62, 1661-62. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would

have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[225] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[226] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

2738. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2739. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

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[225] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[226] *Id.*

2740. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable.

2741. Self-identification can be readily accomplished via a name for the server such as ***artserver***. Domain names are normally used on local networks. My own office network includes computers named ***CHUCKMAINPC, FORENSIC1,*** and ***TARDIS.*** In fact, the book *Using Windows 98*, that Dr. Johnson frequently cites, shows how one can easily name a computer anything one wishes when joining a local workgroup. *Using Windows 98*, page 882.

2742. Dr. Johnson states: “The combination of Elgamal with Muoio is a combination of prior art elements according to known methods to yield predictable result.” Johnson ¶1200. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Second, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2743. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would

discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2744. This claim is also valid for the same reasons as Claim 1.

2745. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

ii. Claim [17.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to receive authentication information from said server system.

2746. Dr. Johnson again simply refers back to his analysis of claim 2 of the ’573 Patent and claim 1 of the ’930 Patent, and again asserts that “Muoio in combination with Elgamal or RFC 2246, discloses an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system.” Johnson ¶1666.

2747. Dr. Johnson admits that Muoio does not disclose authentication, but asserts that, because Muoio discloses the art space controllers and the art server, it “would have been obvious to modify Muoio to perform client-server authentication,” based on Elgamal’s or RFC 2246’s disclosures, “e.g., authenticating the server system before storing package data comprising image data and preferences in memory of the frame device.” Johnson ¶¶1188-95. Dr. Johnson asserts a POSITA would be motivated to implement authentication between the art space controllers and the art server because “[a] POSITA . . . would have been motivated to combine Muoio with the security and device authentication features, including the security handshaking prior to the transfer of data, disclosed in Elgamal and RFC 2246 to ensure data security and integrity and authenticate

the devices within Muoio's client-server (art controller and associated display device—art server system) image distribution system." Johnson ¶1363.

2748. But, as I explained in Section XIII.B.1, the art server and the art space controllers are within a local network, i.e., a local network in a same building, and do not communicate over the Internet. Muoio clearly describes how the network is set up. First, Muoio's display devices and the art server are actually local to one another, i.e., in the same building, Muoio at 1:65-67, 3:35-65, and communicate over a local communications channel 607; the communications channel 607 between the display devices and the art server is *not* disclosed as being the Internet. Muoio states: "The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system." Muoio at 6:17-20. Muoio only mentions the "Internet" three times:

- "The software and data structures may be stored in a computer-readable medium such as a memory, CD-ROM, or disk and may be transmitted over a computer-readable data transmission medium such as ***the Internet***." Muoio at 6:10-14 (emphasis added).
  - This is just a general statement that data can be transmitted over the Internet and does not explain Muoio's architecture.
- "The art distribution system includes an art server 601, an art administration application 602, art space controllers 603, display devices 605, and user control point devices 606. The art server is connected to the art space controllers via communications channel 607, which may be a logical channel when various components execute on the same computer system. The art server communicates via communications channel 608 (e.g., ***the Internet***) to an art mass storage device." Muoio at 6:14-22 (emphasis added).
  - This portion of Muoio discloses that the art space controller (connected locally to the display device) is also connected locally to the art server via communications channel 607. The art server is connected to an "art mass storage device" over a ***different*** communications channel 608, which can be the Internet.
- "FIG. 13 is a flow diagram of the retrieve image identifier function of the art server. This function is a part of the art mass storage interface. This

> function determines whether images that satisfy the queries are now accessible. In step 1301, the function selects the next query. In step 1302, if all the queries have already been selected, then the function continues at step 1303, else the function continues at step 1304. In step 1303, the function goes to sleep until the specified interval at which it is to next check for accessible images. The function then loops to step 1301 to process the queries. In step 1304, the function sends the query request to the mass storage device. In step 1305, the function receives the response to the query request. The sending and receiving of query requests and responses may be over ***the Internet*** and may use the hypertext transfer protocol ("HTTP"). In step 1306, the function updates the image identifier table with image information for images that are not already stored in the image identifier table. In step 1307, the function adds an entry to the new image table so that the image can be downloaded. The function then loops to step 1301 to select next query." Muoio at 8:54-9:7 (emphasis added).
>
> - This section merely explains that the art server communicates with the art mass storage device over the Internet, such as using HTTP.

2749. Figure 6 of Muoio, below, shows that the display devices 605 are connected to a separate art space controller 603, which is in turn connected to the art server 601 using the communications channel 607. As also shown in Figure 6, the other communications channel 608 that is used to communicate over the Internet with the art mass storage device (not shown) is illustrated as a channel that connects outside the local network shown in Figure 6.

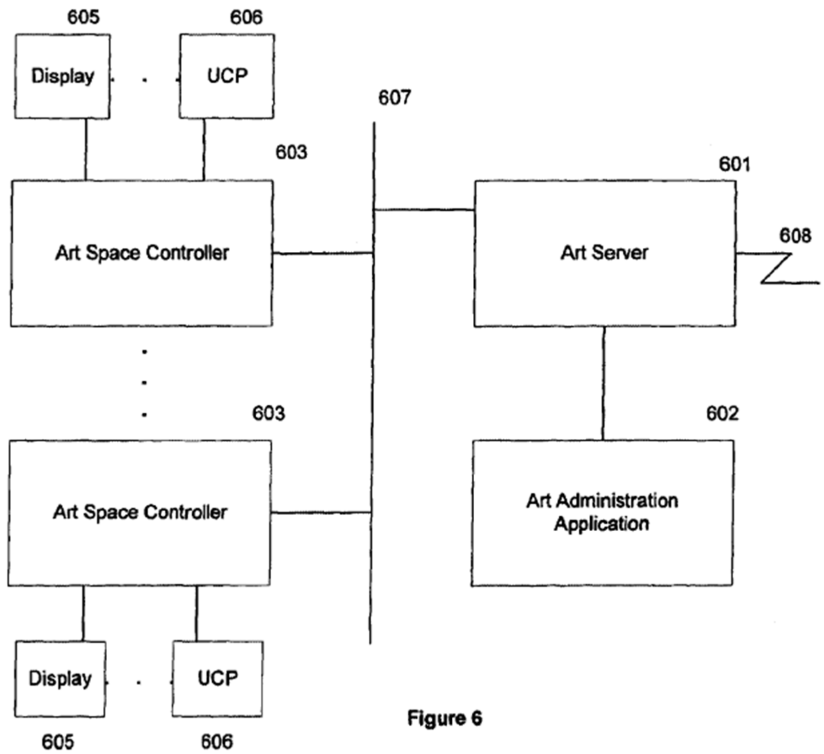

Figure 6

2750. In Muoio, the Internet is only used with respect to a different communications channel 608 between the art server and a remote mass storage device. Thus, the art server 601 essentially acts as a local storage device that provides images to the art space controllers 603 for display on the displays 605.

2751. As shown above, Dr. Johnson's statement that "[t]he display device and associated art space controller is connected to an art server via a communications channel such as the Internet," is clearly in error. Dr. Johnson also asserts that a POSITA would be motivated to combine Muoio and Elgamal or RFC 2246 so that, in communications between Muoio's art space controllers and art server, communications are "prevent[ed] from being intercepted, altered, or otherwise compromised." Johnson ¶¶1197-1202.

2752. This is illogical. Elgamal and RFC 2246 emphasize they are directed to communications between entities over the public Internet. Elgamal at 1:63-2:22; RFC 2246 at 1.

While some local networks could benefit from certain security protocols, Muoio's system is a fairly simple local system that has a small art space controller device pull images stored on a larger art server computer that acts as a storage device in a real-time manner (that is, as the art space controller reaches each image in a play list). Muoio at 9:47-10:3. A POSITA would see little need to implement security measures such as encryption and authentication between the art space controllers and the local art server.

2753. Although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in a system such as Muoio. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶1189-94, 1361-62, 1668-69. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as art space controllers in Muoio (e.g., devices other than powerful desktop computers).[227] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[228] Given those challenges still existed in 2004, if Muoio (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

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[227] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[228] *Id.*

2754. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

2755. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

2756. Dr. Johnson does not address how Muoio would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Muoio describes retrieving images from one local art server. Also, since Muoio discloses using just one local art server to provide images to art space controllers, authenticating the identify of multiple Internet servers using certificates as in Elgamal (SSL) or TLS is overly burdensome. A simpler solution for the local art server to identify itself, if even needed at all, would be preferable. As was discussed earlier in this report, computers frequently use names. My own home office network has computers with names such as CHUCKMAINPC, FORENSIC1, etc. Simply naming the art server something like ARTSERVER, would be effective and far simpler.

2757. Dr. Johnson states: "The combination of Elgamal with Muoio is a combination of prior art elements according to known methods to yield predictable result." Johnson ¶1200. This is incorrect for at least two reasons. First, Dr. Johnson does not address the many steps needed to implement digital certificates in Muoio. Second, as has been pointed out, Muoio would not benefit from such a combination. A combination of Muoio with Elgamal or TLS would not be simple or predictable.

2758. Overall, for this claim element as well as the other claim elements, it appears Dr. Johnson is resorting to hindsight reasoning to cherry pick snippets of the prior art references to meet the claim elements, while avoiding what the prior art as a whole teaches. This form of hindsight reasoning, using the Ceiva invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result—often the very definition of invention. Here, Dr. Johnson does exactly that. Dr. Johnson, with the benefit of the disclosure of the Patents-in-Suit, uses hindsight reasoning to cherry pick disparate elements from the cited references, and provides a vague assertion that their disclosures can be combined somehow to reach all elements of the claims.

2759. This claim is also valid for the same reasons as Claim 1.

2760. For at least the reasons discussed in this section, Muoio alone or in combination does not anticipate or render obvious this claim limitation.

C. Alleged Stylistic Tablet Combinations

2761. I note again that Dr. Johnson's opening report addresses claims that are no longer being asserted. Therefore, when I list below, the specific grounds and prior art combinations asserted in Dr. Johnson's opening report, I have removed reference to the unasserted claims.

2762. ’573 Patent: Dr. Johnson asserts that “Stylistic Tablet, in Combination with Win98, Invalidates the Asserted Claims of the ’573 Patent.” Johnson ¶1692. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’573 Patent:

1. Claims 2, 6, and 19 of the ’573 Patent are invalid in view of Stylistic Tablet in combination with Win98.

Johnson ¶478.

2763. ’930 Patent: Dr. Johnson asserts that “Stylistic Tablet, in Combination with One or More of Win98, O’Toole, and Hoyle Invalidates the Asserted Claims of the ’930 Patent.” Johnson ¶1806. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’930 Patent:

1. Claims 1, 3, 4, 7, and 8 of the ’930 Patent are invalid in view of Stylistic Tablet in combination with Win98;
2. Claim 2 of the ’930 Patent is invalid in view of Stylistic Tablet in combination with:
    - Win98, alone or further in combination with
    - O’Toole.
3. Claims 5, 6, and 15 of the ’930 Patent are invalid in view of Stylistic Tablet in combination with:
    - Win98, and
    - Hoyle.

Johnson ¶479.

2764. ’656 Patent: Dr. Johnson asserts that “Stylistic Tablet, in Combination with One or More of Win98, Criss, Kottapurath, and Kikinis Invalidates the Asserted Claims of the ’656 Patent.” Johnson ¶1894. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’656 Patent:

1. Claims 1, 2, and 5-8 of the ’656 Patent are invalid in view of Stylistic Tablet in combination with:

- Win98, and
- one of Criss, Kottapurath, or Kikinis.

Johnson ¶480.

2765. ’562 Patent: Dr. Johnson asserts that “Stylistic Tablet, in Combination with One or More of Win98, Criss, Kottapurath, Kikinis, and O’Toole, Invalidates the Asserted Claims of the ’562 Patent.” Johnson ¶1948. Specifically, Dr. Johnson asserts the following grounds for the asserted claims of the ’562 Patent:

1. Claims 1, 4, 11, 16, and 17 of the ’562 Patent are invalid in view of Stylistic Tablet in combination with:
   - Win98, and
   - one of Criss, Kottapurath, or Kikinis.

Johnson ¶481.

2766. It is unclear what Dr. Johnson’s rationale is for a supposed combination of Windows 98 and the Fujitsu Stylistic Tablet.

2767. I first note that in his materials considered, Dr. Johnson references archive.org archives of the Fujitsu website. I visited those, beginning with: https://web.archive.org/web/19970623222815/http://www.fpsi.fujitsu.com/products/periph.htm.

2768. There is no mention of any Wireless PCMCIA card. Furthermore, the site is clear that the Fujitsu Stylus 1000 comes with Windows 95 or Windows for Workgroups, no mention is made of Windows 98.

Windows For Workgroups

Enhanced 32-bit components increase disk access speed up to 50% faster than previous versions of Windows. Built-in network software makes file and printer sharing easy - no need for a dedicated server. Includes Pen Extensions 1.0 and CIC HRS 4.0 software. Ships pre-installed on a 260 MB or 340 MB PCMCIA ATA hard drive. (English, French, German, and Italian versions available.)

Windows 95

The Stylistic 1000 is designed for Windows 95. Now get the performance benefits of a 32-bit operating system, the improved ease-of-use of the new graphical user interface and compatibility between mobile and desktop environments. Includes Pen Services 2.0 and CIC HS 5.0 software. Ships pre-installed on a 260 MB or 340 MB PCMCIA ATA hard drive. (English, French, German, and Italian versions available.)

2769. Dr. Johnson also references:

https://web.archive.org/web/19970117012924/http://www.fpsi.fujitsu.com/products/st1kspec.htm.

Therefore, I also visited that archive. This webpage simply mentions that one might obtain a PCMCIA card for the Fujitsu Stylus 1000, not that any such card comes with it. This site only mentions Windows for Workgroups and Windows 95:

Operating Systems

Windows 95 with Pen Services 2.0
MS-DOS 6.2 and Windows for Workgroups 3.11 with Pen Extensions 1.0

2770. Dr. Johnson also references:

"https://web.archive.org/web/19970117012924/http://www.fpsi.fujitsu.com/products/st1kspec.htm."

Thus, I visited that archive as well. This site does not mention any network cards, and again states that the Fujitsu Stylus 1000 comes with Windows 95 or Windows for Workgroups.

2771. Based on the above, it must be noted that the Stylistic Tablet (either the 1000 or the 1000RF) did not come with Windows 98, rather it came with Windows 95. At no point does Dr. Johnson assert that the Stylistic 1000 Tablet running Windows 95 anticipates or renders obvious the asserted claims of the Patents-in-Suit. In fact, one of Dr. Johnson's own citations state: "The Stylistic 1000 RF also carries the 'Designed for Microsoft Windows 95' logo, and is configured with the Microsoft Pen Services 2.0 interface."[229] To use Windows 98 on the Stylistic Tablet device (either the 1000 or the 1000RF) would mean to use it in a manner it was not designed

229 https://web.archive.org/web/19970623222934/http://www.fpsi.fujitsu.com/market/ST1ORFPS.HTM

for. Furthermore, that same reference states that the Stylistic 1000 RF had "a 1.6 megabits per second (Mbps) data transfer rate." That is the low end of the speed of 802.11, even before 802.11a.[230]

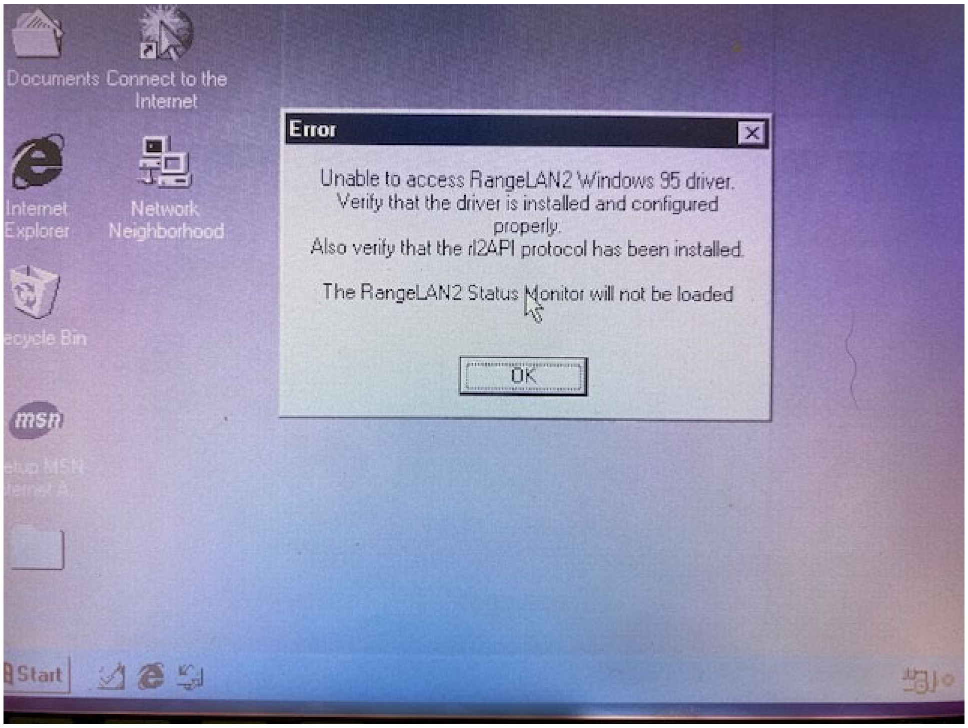
2772. The book *Using Windows 98* Platinum Edition page 968 states that the recommended specifications for installing Windows 98 are a Pentium (or equivalent) CPU, 16 MB of RAM at least 110 MB of free disk space, a double-speed CD-ROM drive, SVGA video capability, and a mouse pointing device. The produced document DJ00000250 describes the Fujitsu Stylistic 1000 specification. I first note that it comes with an AMD Am486 DX4 100 MHz processor. While the book *Using Windows 98* Platinum Edition states that running on a 486 processor is possible, it is not recommended and "should be considered for only the most basic operations."[231] Furthermore, the Fujitsu Stylistic Tablet ships with 8 MB of DRAM. That can be upgraded. The Stylistic Tablet can be purchased with various VGA resolution monitors, but not SVGA. Dr. Johnson's proposed use of Windows 98 on the Stylistic Tablet assumes that a POSITA would not use the operating system that actually came with the Stylistic Tablet, but would instead install an operating system for which the Fujitsu Stylistic Tablet does not meet the recommended specification. A POSITA would not have been motivated to install Windows 98 on the Stylistic Tablet, particularly when the very book that Dr. Johnson relies heavily upon states that installing Windows 98 on a device with such limited resources "should be considered for only the most basic operations."[232]

[230] https://www.pearsonitcertification.com/articles/article.aspx?p=1329709&seqNum=4

[231] *Using Windows 98* Platinum Edition, Page 968.

[232] *Using Windows 98* Platinum Edition, Page 968.

2773. I further note that I used a Stylistic Tablet 1000 running Windows 98 (first edition) and it has multiple performance problems including running sluggishly and having issues with missing device drivers. This is shown in the following image:



2774. Furthermore, that same reference provided by Dr. Johnson states: "The Stylistic 1000 RF is compatible with Novell NetWare, Personal NetWare and TCP/IP protocols. ODI and NDIS LAN." The Netware client for Windows 98 was different than the one required for Windows 95.[233] This means, to use Windows 98, the user would first have to upgrade that client. There are multiple instances of users struggling with that process documented on the internet.[234] In fact, the book "*Using Windows 98*" devotes an entire chapter (chapter 40) to making Windows 98 work with Novell Netware. This demonstrates that such an action is non-trivial.

[233] https://www.zx.net.nz/netware/client/9x.shtml

[234] https://arstechnica.com/civis/threads/drdos-win98-personal-netware.936608/

2775. Dr. Johnson's entire analysis related to the Stylistic Tablet is predicated on it running an operating system that it did not actually ship with, then connecting that device to a network with a speed of at most 1.6 megabits per second. This would make activities that Dr. Johnson points to, such as automatic subscriptions, simply untenable.

2776. It must be noted that the Stylistic Tablet (either 1000 or 1000 RF) did not come with Windows 98, rather it came with Windows 95. At no point does Dr. Johnson assert that the Stylistic 1000 Tablet running Windows 95 anticipates or renders obvious the asserted claims of the Patents-in-Suit. Dr. Johnson's entire analysis related to the Stylistic Tablet is predicated on it running an operating system that it did not actually ship with.

2777. All of Dr. Johnson's assertions regarding the Stylistic Tablet involve a POSITA obtaining a Tablet with a network card (the RF version) or installing one. Then installing Windows 98, an operating system that the Tablet (either the 1000 or the 1000RF) did not come with), then connecting to a network with a maximum bandwidth of 1.6 megabits per second. This is a string of suppositions based on suppositions. At best if a POSITA did this and went through the various troubleshooting activities it would have necessitated, the end result might have been a device with slow internet speeds, inappropriate for items like downloading large pieces of data (such as operating system updates) or supporting automatic network activity including subscriptions.

2778. It should also be noted that the book *Using Windows 98*, that Dr. Johnson relies heavily on, describes upgrading from Windows 95 to Windows 98 beginning on page 969. The first step is to install a CD-ROM, this was not something that could be accomplished over a network connection. That section of *Using Windows 98* goes on to state that there have been three versions of Windows 95, and one must first identify which version one is dealing with.

Operating Systems

Windows 95 with Pen Services 2.0

MS-DOS 6.2 and Windows for Workgroups 3.11 with Pen Extensions 1.0

2779. Dr. Johnson also references:

"https://web.archive.org/web/19970117011946/http://www.fpsi.fujitsu.com/products/st1000.htm."

Therefore I also visited that website. This site merely states one might obtain a PCMCIA card for the device. This site does not mention any operating system.

2780. I looked further, and by April 1999 Fujitsu was advertising the Fujitsu Stylistic 2300:[235]

The Windows® pen tablet computer leader, Fujitsu Personal Systems, Inc. (FPSI) delivers Working Mobility™ to large organizations implementing mobile decision-support applications.

NEW **PenCentra Windows CE Tablet Unveiled at DemoMobile 99**

NEW **Stylistic Wins Third Straight Mobility Award**

NEW **Fujitsu Stylistic 2300** **Fujitsu Point 1600**

NEW **Search Online for FPSI VARs**

FPSI in the News **Employment Opportunities** **Year 2000 Compliance**

2781. I also looked at the same product specification page that Dr. Johnson referenced, but I looked further at dates such as January 17, 1998:[236]

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[235] https://web.archive.org/web/19990428065627/http://www.fpsi.fujitsu.com/

[236] https://web.archive.org/web/19980117170003/http://www.fpsi.fujitsu.com:80/products/st1000.htm

Features

- 100 MHz 486 DX4 CPU
- Microsoft Windows 95 operating system
- Eight-inch (8") DSTN color LCD
- 7.3" x 11" x 1.6" and 3.5 lbs.
- Choice of high-capacity HDD or Flash storage
- 8 MB DRAM expandable to 24 MB
- One Type III ATA and two stacked Type II or one Type III Version 2.1 PCMCIA slots
- Industry-standard serial, parallel, keyboard, VGA and IrDA ports
- Port replicator
- Long-lasting lithium ion battery pack provides 3-6 hours battery life
- Three-year system and optional no-fault display warranties
- IrDA infrared wireless adapter

2782. The only operating system mentioned is Windows 95, and no mention of network cards, just a general discussion of PCMCIA slots.

2783. I continued exploring the archives and checked the archive as of April 17, 1999, again the only operating system mentioned is Windows 95 and there is not disclosure of a network card:

Features

- 100 MHz 486 DX4 CPU
- Microsoft Windows 95 operating system
- Eight-inch (8") DSTN color LCD
- 7.3" x 11" x 1.6" and 3.5 lbs.
- Choice of high-capacity HDD or Flash storage
- 8 MB DRAM expandable to 24 MB
- One Type III ATA and two stacked Type II or one Type III Version 2.1 PCMCIA slots
- Industry-standard serial, parallel, keyboard, VGA and IrDA ports
- Port replicator
- Long-lasting lithium ion battery pack provides 3-6 hours battery life
- Three-year system and optional no-fault display warranties
- IrDA infrared wireless adapter

2784. In an attempt to ascertain Dr. Johnson's basis for *Using Windows 98* combined with the Fujitsu Stylus 1000, and for his claim that it came with a network card, I continued on to the

last archived version of the products/st1000.htm page. That is April 28, 1999. There is a listing for September 29, 2000, but no web page is archived.

Features

- 100 MHz 486 DX4 CPU
- Microsoft Windows 95 operating system
- Eight-inch (8") DSTN color LCD
- 7.3" x 11" x 1.6" and 3.5 lbs.
- Choice of high-capacity HDD or Flash storage
- 8 MB DRAM expandable to 24 MB
- One Type III ATA and two stacked Type II or one Type III Version 2.1 PCMCIA slots
- Industry-standard serial, parallel, keyboard, VGA and IrDA ports
- Port replicator
- Long-lasting lithium ion battery pack provides 3-6 hours battery life
- Three-year system and optional no-fault display warranties
- IrDA infrared wireless adapter

2785. The only operating system mentioned is Windows 95, and no mention of network cards, just a general discussion of PCMCIA slots.

2786. Dr. Johnson's combination is based on multiple assumptions, including that a POSITA would take the Fujitsu Stylistic 1000 and install on it an operating system it did not come with (Windows 98), then install a PCMCIA network card, and then possibly with this combination a POSITA might, according to Dr. Johnson, meet the claim limitations. This ignores many facts. The first being that the Fujitsu Stylistic Tablet did not come with Windows 98. The second being that installing Windows 98 on the Fujitsu Stylistic would require some effort. The third being that the Fujitsu Stylistic 1000 did not come with a network card, installing and configuring one would require additional effort.

2787. Dr. Johnson makes the statement: "The Fujitsu Stylistic 1000 and Stylistic 1000 RF tablets meet these Microsoft recommended minimum system requirements for upgrading to Windows 98 and thus were able to benefit from the improved features and performance offered by Windows 98 and promoted in the press." Johnson ¶342 (quoting "Michael J. Miller, Windows 98

Put to the Test, PC Magazine, vol. 17, no. 14, August 1998, at 110"). However, Dr. Johnson does not point to anyone actually upgrading the Fujitsu Stylistic 1000 to Windows 98, nor Fujitsu ever shipping it with Windows 98. Dr. Johnson does state that he upgraded a Fujitsu Stylistic 1000 to Windows 98. Johnson ¶343-44. This is noteworthy because later Dr. Johnson speculates about network cards, *Using Windows 98* subscriptions, and other features, but never mentions actually doing any of these on the Fujitsu Stylistic 1000. There appears to be no evidence in Dr. Johnson's report that he tested the Stylistic Tablet running Windows 98 himself.

2788. Among other items, Dr. Johnson asserts that the Stylistic Tablet uses the Proxim RangeLAN2 network card, and mentions this 36 times in his report. Johnson ¶1345. However, he never mentions actually putting that card in a Fujitsu Stylistic and determining if it would work.

2789. Dr. Johnson puts in quotes the following phrase: "uses the Proxim RangeLAN2 frequency hopping radio that features 15 independent channels, a 1.6 megabits per second (Mbps) data transfer rate, and a 200 to 500 indoor wireless range to an Ethernet Access point." Johnson ¶1345. However, he states this comes from "Stylistic 1000 RF Press Release" but that is not in his materials considered, and no link is given for it., unless he is actually referring to "Press Release: Fujitsu and Proxim Combine Best-of-Breed Tablet Computing and Wireless LAN Technologies for Vertical Markets, September 30, 1996."

2790. Assuming that is what Dr. Johnson meant to refer to then, which can be found on archive.org,[237] then a POSITA would note several things. One of which would be that this page again affirms that this product used Windows 95, not Windows 98. Second, this is a separate

237 https://web.archive.org/web/19970623222934/http://www.fpsi.fujitsu.com/market/ST1ORFPS.HTM

product, namely the Fujitsu Stylistic 1000 RF. Dr. Johnson never even asserts that he or anyone else have upgraded that product to Windows 98.

2791. Dr. Johnson's combination thus becomes even more complicated. He is asserting that a POSITA might have taken features from the Fujitsu Stylistic 1000 RF, combined them with the Fujitsu Stylistic 1000, then upgraded that hybrid device to Windows 98. Not only is this a convoluted process that a POSITA would not have tried, Dr. Johnson provides no rationale for why a POSITA might consider it. Furthermore, despite having a Fujitsu Stylistic 1000, Dr. Johnson does not claim to have put any network card in it to determine if his assertions would work. I did find multiple sites where one could easily purchase not only a network card, but the actual RangeLAN2 that Dr. Johnson references.[238] I also found this item on E-Bay, but those listings change, and a link may not still be available after this report is written.

1. Claims 1, 2, 6, and 19 of the '573 Patent are valid in view of Stylistic Tablet in combination with Win98

2792. Dr. Johnson addresses claim 1 in his report, so I respond to that in this section. Note that claim 6 includes the elements of claim 1.

i. Claim [1.pre] A system for distributing image data comprising:

2793. Dr. Johnson asserts that the Stylistic Tablet running Win98 is a "system for distributing image data" because, using Win98, the Stylistic Tablet could run a web browser, Internet Explorer 4, to display Internet web pages. Johnson ¶¶1693-1697. This is not a system for distributing image data as a POSITA would understand it from the Patents-in-Suit. As I explained in Section VI summarizing the Patents-in-Suit, the Patents-in-Suit sought to alleviate various

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238 https://cybarcode.com/proxim/interface_cards/pcmcia_pc_card/wireless_rf/7400_pc_card; https://picclick.com/Proxim-RangeLan2-7400-PC-Card-LAN-Adapter%C2%A0-FCC-273842710746.html

problems in the prior art with respect to display devices and their usability. It is apparent from the disclosures of the Patents-in-Suit that they did not seek to merely create a small form factor general computing/Windows device - these devices, such as Windows laptops, were commonplace in the 1990s.

2794. Dr. Johnson ignores the express descriptions in the Patents-in-Suit of the problems the inventors were attempting to solve, such as (1) that prior systems required a user to "know how to navigate around the operating system and how to use the program utilized to obtain the data," and (2) that, to disseminate data using client pull, the client computer must include information about the data to be disseminated in the request, such as having to specifically identify in the request the content to be downloaded. *See, e.g.*, '930 Patent at 5:10-21. A general purpose Windows computer would not address any of the problems identified in the Patents-in-Suit.

ii. Claim [1.a] at least one frame device

2795. In reference to this claim limitation, Dr. Johnson claims the Stylistic Tablet combined with Win98 meets what he alleges to be a definition of a frame device in the '573 Patent at 6:35-39. Johnson ¶¶1698-1702. That section of the '573 Patent states: "The present invention comprises one or more interconnected frame devices. A frame device is a self-configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric (e.g., a computer network)." '573 Patent at 6:34-39.

2796. Dr. Johnson argues that, using Win98, the Stylistic Tablet can download web pages from the Internet, and alleges this means the Stylistic Tablet can obtain images for display from a repository. Johnson ¶1702. Web pages are served from various web servers hosted by various entities and, while web pages can include images as part of the web page, this would not be understood to be a repository as described in the Patents-in-Suit. For example, the repository in the Patents-in-Suit is described as "a centralized repository" that is "populated with image data via

the image collection process" *see, e.g.*, '573 Patent at Abstract, and "stores information used to control the content distributed to and from each frame" such as data about each user and the preferences associated with that user." *See, e.g.*, '573 Patent at 19:6-15.¶

2797. Web servers serving web pages would not include these features described in the Patents-in-Suit.

2798. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

iii. Claim [1.b] configured to operate according to preferences defined by a user

2799. Dr. Johnson refers to Active Channel in which Windows users subscribe to specific web content. Johnson ¶1703. However, none of what Dr. Johnson points to is related to 'at least one frame device configured to operate according to preferences defined by a user."

2800. Furthermore, Dr. Johnson asserts that "A POSITA would have understood that "multiple HTML files" and "graphics" constitute preferences defined by the web page developer who composes the CDF file." Johnson ¶1703. Even if one agrees with Dr. Johson, and I do not, these are not preferences defined by a user. Rather these "preferences" are related to some web developer, presumably unconnected to the actual use of the Stylistic Tablet running Windows 98.

2801. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites the Using Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against

installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[239]

2802. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

iv. Claim [1.d] a user interface coupled to at least one server system via a network [1.e] wherein said user interface is physically separable from said at least one frame device and [1.f] configured to obtain image data and said preferences from said user [1.g] and provide said image data and said preferences to said at least one server system

2803. Dr. Johnson states: "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious for a user (e.g., a web page developer) to use a different Win98 computer as a user interface coupled to at least one server system (e.g., a web page server) via a network (e.g., the Internet) wherein said user interface is physically separable from said at least one frame device (e.g., the Stylistic Tablet running Win98)." Johnson ¶1708. I agree with Dr. Johnson that Stylistic Tablet and Win98, alone or combined, does not provide a user interface coupled to at least one server system via a network wherein said user interface is physically separable from at least one frame device.

2804. Dr. Johnson asserts it would be obvious to provide such a user interface because:

> For example, as detailed below, Win98 provides user interface tools for web page developers to create web pages according to their preferences and to publish their created web pages on the Internet. For example, Win98 includes FrontPage Express, which "is a near-WYSIWYG HTML page editor that enables [web page developers] to build pages to be viewed in a web browser over either the Internet or local corporate intranets." *Using Windows 98* at 780. "In HTML special character codes are inserted into a text file to generate particular effects, such as bold or the appearance of a graphic, a hyperlink, or a table. When a browser opens a page, the browser reads and then translates the HTML into the text and images [a Windows end-users] see onscreen." Id.

[239] Using Windows 98 Platinum Edition, page 968.

. . .

> Using FrontPage Express, a user can create a web page with inserted images in either the GIF format or the JPEG format "from two different sources: from a file on your computer or network or from another site on the web." Id. at 800-01. Once an image is added to the web page, a user may further define display preferences such as managing the size of the image or adding a hyperlink to the image. Id. at 802-03.
>
> . . .
>
> Win98 recognizes the need of its users to publish their created web pages to server systems on the Internet. Id. at 817 ("When you have created all the pages for your web, you probably will want to publish the pages to a web so that other users can access the pages. Simply saving the pages you've created in FrontPage Express isn't enough, however. You must publish the pages to a specific web."). Thus, it provides a "built-in Web Publishing Wizard" for publishing "HTML pages to any web server." Id. at 13. The Web Publishing Wizard can be "access from the Start, Programs menu," and it "walks [the user] through the steps of publishing [the user's] pages and creating a starting home page." Id. at 817; see, e.g., Windows 98 Resource Kit at 991-92 ("The Web Publishing Wizard can post to local ISPs, IIS, intranet servers on your local area network, and FrontPage."). The Web Publishing Wizard "guide[s] [the user] through the steps of connecting to [his/her] ISP or intranet site," "determines the protocol needed to copy the files," and "automatically upload Web files from a directory [the user] specify" "to the appropriate directory on the ISP computer." Windows 98 Resource Kit at 991-92.

Johnson ¶¶1708-10.

2805. Essentially, Dr. Johnson asserts that, although Stylistic Tablet and Win98 do not provide a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device, someone could use Win98-related tools to make one, such as by constructing a web page. This is clearly grasping at straws. This is akin to saying that any computer program is obvious because there exist programming Integrated Development Environments (IDEs) that can be used to make any program a user wishes to make. But the user interface Dr. Johnson proposes to be built would need to have particular functionality to meet the claim elements of the Patents-in-Suit, including obtaining image data and

said preferences from said user and providing said image data and said preferences to said at least one server system, and Dr. Johnson has not shown that to be the case.

2806. For example, regarding "and configured to obtain image data and said preferences from said user," Dr. Johnson states:

> To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious to use a different Win98 computer as a user interface configured to obtain image data and said preferences from said user (e.g., the web page developer as discussed above). For example, as discussed above, Win98 includes FrontPage Express "that enables [web page developers] to build pages to be viewed in a web browser over either the Internet or local corporate intranets." *Using Windows 98* at 780. "In HTML special character codes are inserted into a text file to generate particular effects, such as bold or the appearance of a graphic, a hyperlink, or a table. When a browser opens a page, the browser reads and then translates the HTML into the text and images [a Windows end-users] see onscreen." *Id*. Thus, using FrontPage Express, a web page developer can create a web page with images in either the GIF format or the JPEG format "from two different sources: from a file on your computer or network or from another site on the web." Id. at 800-01. Once an image is added to the web page, a user may further define display preferences such as managing the size of the image or adding a hyperlink to the image. Id. at 802-03. Furthermore, web page developers may further specify web page display preferences using, for example, cascading style sheets (CSS). See, e.g., Id. at 615 ("Sophisticated designers, on the other hand, use web templates called cascading style sheets to specify fonts, colors, spacing, and other design elements that control the look and feel of the page."); Windows 98 Resource Kit at 953 ("Web authors can position elements to make sites look as they want them to. The Internet Explorer browsing software supports cascading style sheets (CSS) positioning, or the ability to position HTML elements in x- and y- coordinates, and the z-plane.").

Johnson ¶1711.

2807. Again, Dr. Johnson is merely stating that a website could be created, and during that process, certain data such as graphics, hyperlinks, tables, and images can be used to construct the website. But this is simply discussing that a web page can be created with those resources and does not provide that a user interface is actually provided with the functionality of obtaining image data and preferences from users to be used with displaying images on a display device according to preferences.

2808. Regarding "provide said image data and said preferences to said at least one server system," Dr. Johnson states:

> To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious to use a different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system. For example, as discussed above, a POSITA would have found it obvious to use a different Win98 computer as a user interface configured to obtain image data and said preferences from said user (e.g., the web page developer). Furthermore, as discussed above, a POSITA would have found it obvious to use the different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system. For example, Win98 recognizes the need of its users (e.g., web page developers) to publish their created web pages to a server system on the Internet. Id. at 817 ("When you have created all the pages for your web, you probably will want to publish the pages to a web so that other users can access the pages. Simply saving the pages you've created in FrontPage Express isn't enough, however. You must publish the pages to a specific web.") Thus, it provides a "built-in Web Publishing Wizard" for publishing "HTML pages to any web server." Id. at 13. The Web Publishing Wizard can be "access[ed] from the Start, Programs menu," and it "walks [the user] through the steps of publishing [the user's] pages and creating a starting home page." Id. at 817; see, e.g., Windows 98 Resource Kit at 991-92 ("The Web Publishing Wizard can post to local ISPs, IIS, intranet servers on your local area network, and FrontPage."). The Web Publishing Wizard "guide[s] [the user] through the steps of connecting to [his/her] ISP or intranet site," "determines the protocol needed to copy the files," and "automatically upload[s] Web files from a directory [the user] specif[ies]" "to the appropriate directory on the ISP computer." Id. at 991-92. As discussed above, these web files include image data and preferences.

Johnson ¶1712.

2809. Yet again, Dr. Johnson merely asserts that files can be uploaded as resources in constructing a web page. Dr. Johnson provides no disclosure of a user interface that has the functionality of providing said image data and said preferences to said at least one server system for use by a display device.

2810. Dr. Johnson states: "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious to use a different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system."

Johnson ¶1712. I first note that this appears to be a tacit admission that neither the Stylistic Tablet nor Windows 98 actually disclose this limitation. On that issue I agree with Dr. Johnson.

2811. Dr. Johnson then states: "For example, as discussed above, a POSITA would have found it obvious to use a different Win98 computer as a user interface configured to obtain image data and said preferences from said user (e.g., the web page developer). Furthermore, as discussed above, a POSITA would have found it obvious to use the different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system." Johnson ¶1712.

2812. Dr. Johnson is positing that for some reason a POSITA would want to setup two different Windows 98 computers, and use one to upload website resources. Setting aside the fact that the Stylistic 1000 Tablet did not come with Windows 98, and that Dr. Johnson has not shown that anyone other than himself in 2023 ever put Windows 98 on a Stylistic 1000 Tablet, what Dr. Johnson is positing is needless complexity and which does not even provide the claimed user interface.

2813. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

v. Claim [1.h] said at least one server system coupled to said at least one frame device via said network

2814. Regarding "said at least one server system coupled to said at least one frame device via said network," Dr. Johnson merely asserts that the Stylistic Tablet running Win98 can use a feature called "Active Channel" that:

> allows Windows users to subscribe to pre-packaged web contents put together by a webmaster, "just as a newspaper publisher assembles a daily paper." Id. at 692. A user subscribes to an Active Channel Website "by clicking a hyperlink to a Channel Definition Format (CDF) file, which contains subscription information about that channel." Windows 98 Resource Kit at 260. "The CDF file is copied from the

> Active Channel server to the user's computer, and the channel is added to the user's Favorites and Channels in the Internet Explorer browsing software." Id.

Johnson ¶1723.

2815. "Active Channel" simply allows a user to incorporate data from a subscription service.

2816. As I have explained, Dr. Johnson is again conflating what Windows 98 might do if installed on a PC connected to a network, with what Windows 98 can do if installed on the Fujitsu Stylistic PC. A review of the Stylistic 1000 Technical Reference Guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. A POSITA would understand that Windows 98 subscriptions would not work on Windows 98 running on the Fujitsu Stylistic Tablet.

2817. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead he cites a Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating and "should be considered for only the most basic operations."[240]

2818. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

[240] Using Windows 98 Platinum Edition, page 968.

vi. Claim [1.i] wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data.

2819. Dr. Johnson states: "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious that said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data." Johnson ¶1717.

2820. Dr. Johnson refers to a "subscription tool" in the IE4 browser that he alleges "automatically issues a request for said image data" via an ability to subscribe to a web page that will be updated in the browser at a set time. Johnson ¶¶1718-1720. Dr. Johnson asserts that "Specifically, Win98 provides a web subscription tool in IE4 that automatically directs the computer to send requests to update subscribed web pages." Johnson ¶1718. A POSITA would recognize that this is an update to a web page, which may or may not include images. This is not image data or preferences. Furthermore, this does not occur due to a frame device automatically issuing a request. Quite the contrary, the user must take specific steps to subscribe. In fact, Dr. Johnson cites the *Using Windows 98* book: "The dialog box allows a user to 'create a custom schedule, using a dizzying variety of options.'" Johnson ¶1719 (quoting *Using Windows 98* at 689-90).

2821. Dr. Johnson then points to cascading style sheets asserting these are display preferences. Johnson ¶1722. Even if one agrees with Dr. Johnson that these are display preferences, and I do not agree, the term 'said preferences' is referring to an antecedent. In this case the 'said preferences' is referring to user preferences discussed in the claims. The cascading style sheets developed by a web developer are not preferences of the user of the Stylistic Tablet.

2822. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 Technical Reference Guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

2823. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. The Fujitsu Tablet has no capability to periodically connect, even with its modem.

2824. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites a Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the Using Windows 98 book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating and that such "should be considered for only the most basic operations."[241]

2825. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

vii. Claim [2.pre] A system for distributing image data comprising:

2826. For this claim limitation in Claim 2, Dr. Johnson simply refers back to his analysis regarding claim element [1pre]. Johnson ¶1728. Dr. Johnson asserts that the Stylistic Tablet running Win98 is a "system for distributing image data" because, using Win98, the Stylistic Tablet

[241] Using Windows 98 Platinum Edition, page 968

could run a web browser, Internet Explorer 4, to display Internet web pages. Johnson ¶¶1693-97. This is not a system for distributing image data as a POSITA would understand it from the Patents-in-Suit. As I explained in Section VI summarizing the Patents-in-Suit, the Patents-in-Suit sought to alleviate various problems in the prior art with respect to display devices and their usability. It is apparent from the disclosures of the Patents-in-Suit that they did not seek to merely create a small form factor general computing/Windows device - these devices, such as Windows laptops, were commonplace in the 1990s.

2827. Dr. Johnson ignores the express descriptions in the Patents-in-Suit of the problems the inventors were attempting to solve, such as (1) that prior systems required a user to "know how to navigate around the operating system and how to use the program utilized to obtain the data," and (2) that, to disseminate data using client pull, the client computer must include information about the data to be disseminated in the request, such as having to specifically identify in the request the content to be downloaded. *See, e.g.*, '930 Patent at 5:10-21. A general purpose Windows computer would not address any of the problems identified in the Patents-in-Suit.

2828. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

viii. Claim [2.a] at least one frame device

2829. For this claim limitation in Claim 2, Dr. Johnson simply refers back to his analysis regarding claim element [1a]. Johnson ¶1729. In reference to that claim limitation, Dr. Johnson claims the Stylistic Tablet combined with Win98 meets what he alleges to be a definition of a frame device in the '573 Patent at 6:35-39. Johnson ¶1698-1702. That section of the '573 Patent states: "The present invention comprises one or more interconnected frame devices. A frame device is a self-configuring digital picture frame that obtains images for display from a repository

of that may be accessed via an interconnection fabric (e.g., a computer network)." '573 Patent at 6:34-39.

2830. Dr. Johnson argues that, using Win98, the Stylistic Tablet can download web pages from the Internet, and alleges this means the Stylistic Tablet can obtain images for display from a repository. Johnson ¶1702. Web pages are served from various web servers hosted by various entities and, while web pages can include images as part of the web page, this would not be understood to be a repository as described in the Patents-in-Suit. For example, the repository in the Patents-in-Suit is described as "a centralized repository" that is "populated with image data via the image collection process," *see, e.g.*, '573 Patent at Abstract, and "stores information used to control the content distributed to and from each frame" such as data about each user and the preferences associated with that user." *See, e.g.*, '573 Patent at 19:6-15.

2831. Web servers serving web pages would not include these features described in the Patents-in-Suit.

2832. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

ix. Claim [2.b] configured to operate according to preferences comprising an image display list defined by a user,

2833. For this claim limitation, Dr. Johnson again refers to the Active Channel feature of Win98 in which Windows users subscribe to specific web content. Johnson ¶1730. I would first disagree with Dr. Johnson that web content constitutes preferences. None of what Dr. Johnson points to is related to "at least one frame device configured to operate according to preferences defined by a user."

2834. Dr. Johnson asserts that "A POSITA would have understood that "multiple HTML files" and "graphics" constitute preferences defined by the web page developer who composes the

CDF file." Johnson ¶1730. Even if one agrees with Dr. Johson, and I do not, these are not preferences defined by a user. Rather these "preferences" are related to some web developer, presumably unconnected to the actual use of the Stylistic Tablet running Windows 98.

2835. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites the Using Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[242]

2836. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 Technical Reference Guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. Screenshots from my testing are provided here:

[242] Using Windows 98 Platinum Edition, page 968.

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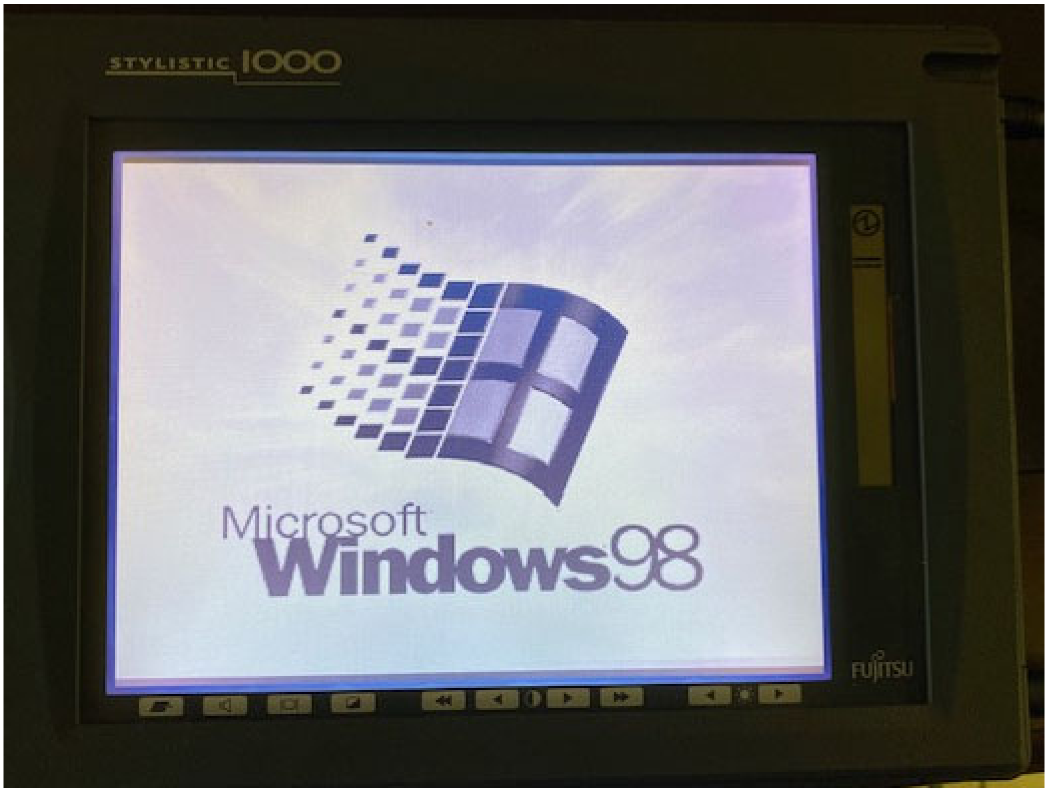

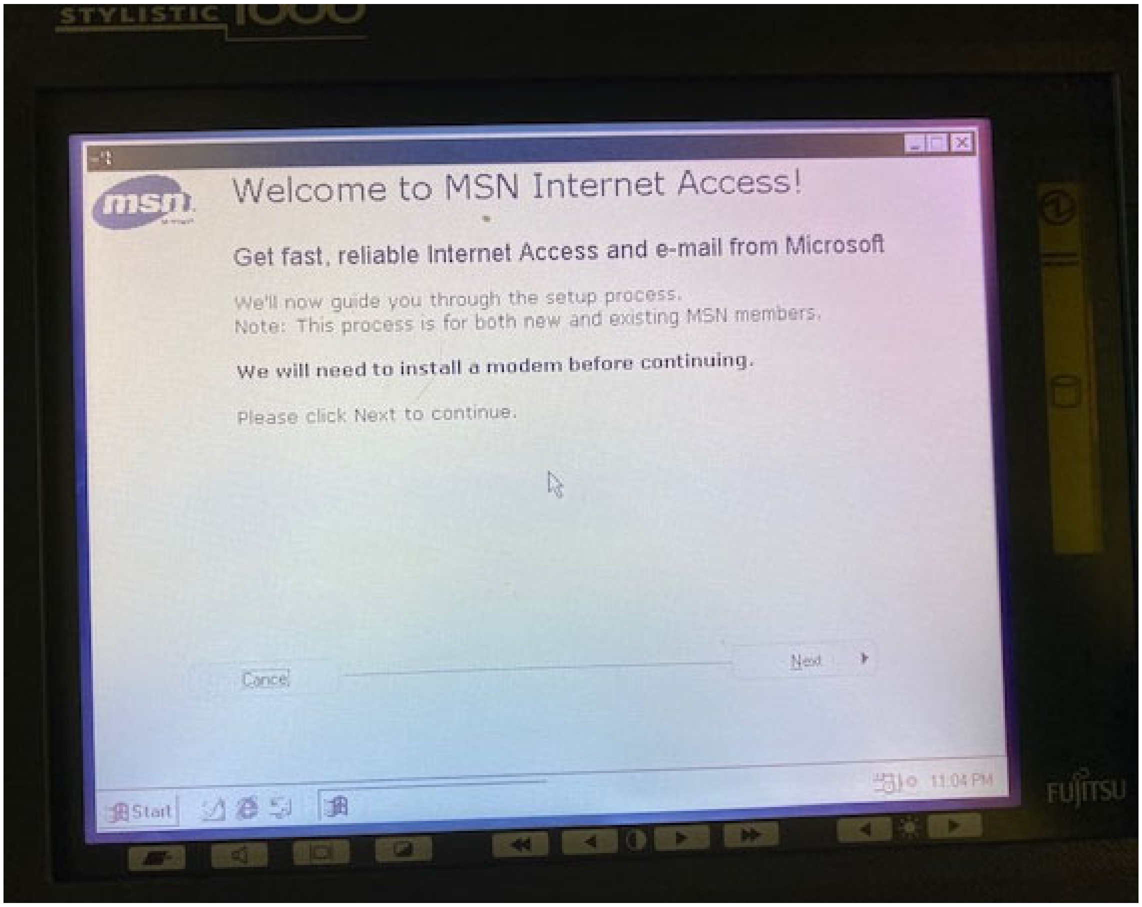

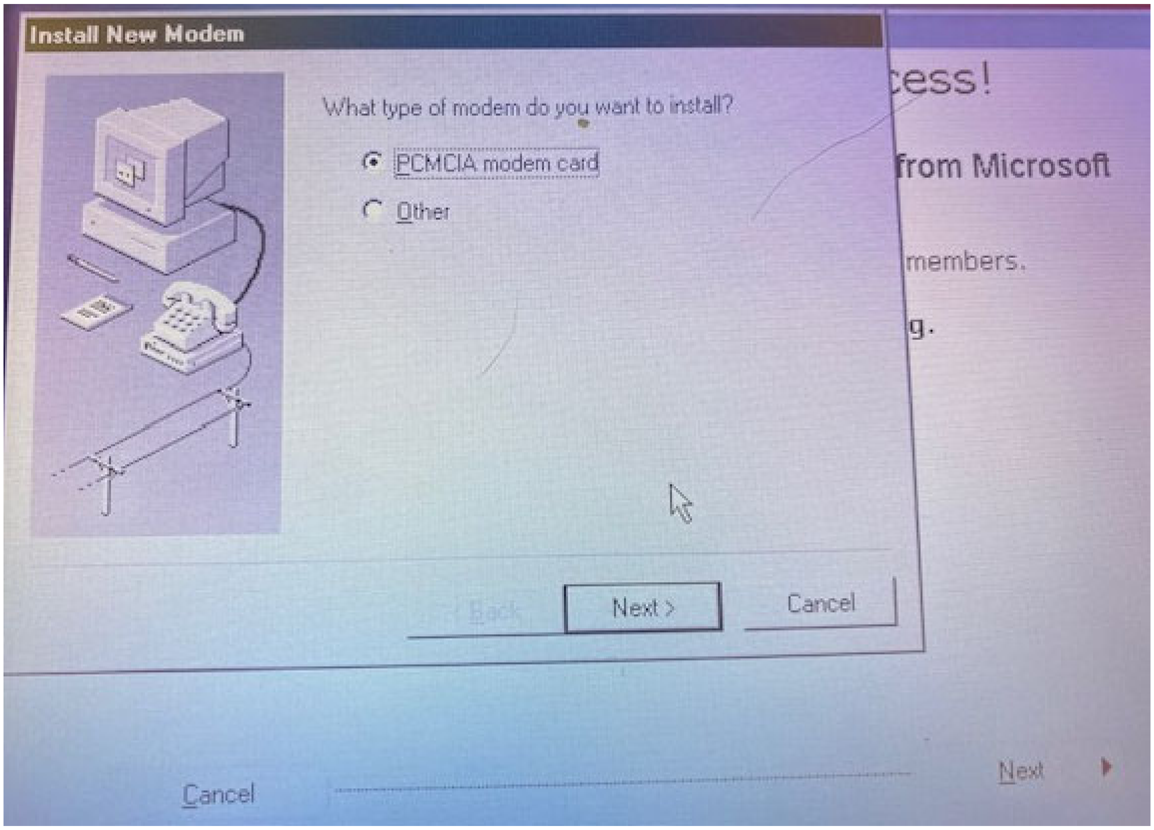

2837. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet. First, the Tablet requires a separate card to connect to a network. The only card described for the Stylistic 1000 Tablet is a modem. That requires dialup, which does not facilitate an ongoing connection. Dr. Johnson also points to the Stylistic 1000 RF, however it must first be noted that this is a separate model. Furthermore, that model was only capable of a maximum of 1.6 megabyte per second connection. That does not facilitate ongoing, continuous connectivity.

2838. The subscription that Dr. Johnson refers to would not work on the Fujitsu Stylistic 1000.

2839. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites a Windows 98 book and

assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[243]

2840. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

x. Claim [2.d] a user interface coupled to at least one server system via a network [2.e] wherein said user interface is physically separable from said at least one frame device [2.f] and configured to obtain image data and said preferences from said user [2.g] and provide said image data and said preferences to said at least one server system

2841. Dr. Johnson refers back to his discussion of claim 1, so I address those issues here. Dr. Johnson states: "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious for a user (e.g., a web page developer) to use a different Win98 computer as a user interface coupled to at least one server system (e.g., a web page server) via a network (e.g., the Internet) wherein said user interface is physically separable from said at least one frame device (e.g., the Stylistic Tablet running Win98)." Johnson ¶1708. I agree with Dr. Johnson that Stylistic Tablet and Win98, along or combined, does not provide a user interface coupled to at least one server system via a network wherein said user interface is physically separable from at least one frame device.

2842. Dr. Johnson asserts it would be obvious to provide such a user interface because:

> For example, as detailed below, Win98 provides user interface tools for web page developers to create web pages according to their preferences and to publish their created web pages on the Internet. For example, Win98 includes FrontPage Express, which "is a near-WYSIWYG HTML page editor that enables [web page developers] to build pages to be viewed in a web browser over either the Internet

[243] Using Windows 98 Platinum Edition, page 968.

> or local corporate intranets." *Using Windows 98* at 780. "In HTML special character codes are inserted into a text file to generate particular effects, such as bold or the appearance of a graphic, a hyperlink, or a table. When a browser opens a page, the browser reads and then translates the HTML into the text and images [a Windows end-users] see onscreen." Id.
>
> Using FrontPage Express, a user can create a web page with inserted images in either the GIF format or the JPEG format "from two different sources: from a file on your computer or network or from another site on the web." Id. at 800-01. Once an image is added to the web page, a user may further define display preferences such as managing the size of the image or adding a hyperlink to the image. Id. at 802-03.
>
> Win98 recognizes the need of its users to publish their created web pages to server systems on the Internet. Id. at 817 ("When you have created all the pages for your web, you probably will want to publish the pages to a web so that other users can access the pages. Simply saving the pages you've created in FrontPage Express isn't enough, however. You must publish the pages to a specific web."). Thus, it provides a "built-in Web Publishing Wizard" for publishing "HTML pages to any web server." Id. at 13. The Web Publishing Wizard can be "access from the Start, Programs menu," and it "walks [the user] through the steps of publishing [the user's] pages and creating a starting home page." Id. at 817; see, e.g., Windows 98 Resource Kit at 991-92 ("The Web Publishing Wizard can post to local ISPs, IIS, intranet servers on your local area network, and FrontPage."). The Web Publishing Wizard "guide[s] [the user] through the steps of connecting to [his/her] ISP or intranet site," "determines the protocol needed to copy the files," and "automatically upload Web files from a directory [the user] specify" "to the appropriate directory on the ISP computer." Windows 98 Resource Kit at 991-92.

Johnson ¶1708-10.

2843. Essentially, Dr. Johnson asserts that, although Stylistic Tablet and Win98 do not provide a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device, someone could use Win98-related tools to make one, such as by constructing a web page. This is clearly grasping at straws. This is akin to saying that any computer program is obvious because there exist programming Integrated Development Environments (IDEs) that can be used to make any program a user wishes to make. But the user interface Dr. Johnson proposes to be built would need to have particular functionality to meet the claim elements of the Patents-in-Suit, including obtaining image data and

said preferences from said user and providing said image data and said preferences to said at least one server system, and Dr. Johnson has not shown that to be the case.

2844. For example, regarding "and configured to obtain image data and said preferences from said user," Dr. Johnson states:

> To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious to use a different Win98 computer as a user interface configured to obtain image data and said preferences from said user (e.g., the web page developer as discussed above). For example, as discussed above, Win98 includes FrontPage Express "that enables [web page developers] to build pages to be viewed in a web browser over either the Internet or local corporate intranets." *Using Windows 98* at 780. "In HTML special character codes are inserted into a text file to generate particular effects, such as bold or the appearance of a graphic, a hyperlink, or a table. When a browser opens a page, the browser reads and then translates the HTML into the text and images [a Windows end-users] see onscreen." *Id*. Thus, using FrontPage Express, a web page developer can create a web page with images in either the GIF format or the JPEG format "from two different sources: from a file on your computer or network or from another site on the web." Id. at 800-01. Once an image is added to the web page, a user may further define display preferences such as managing the size of the image or adding a hyperlink to the image. Id. at 802-03. Furthermore, web page developers may further specify web page display preferences using, for example, cascading style sheets (CSS). See, e.g., Id. at 615 ("Sophisticated designers, on the other hand, use web templates called cascading style sheets to specify fonts, colors, spacing, and other design elements that control the look and feel of the page."); Windows 98 Resource Kit at 953 ("Web authors can position elements to make sites look as they want them to. The Internet Explorer browsing software supports cascading style sheets (CSS) positioning, or the ability to position HTML elements in x- and y- coordinates, and the z-plane.").

Johnson ¶1711.

2845. Again, Dr. Johnson is merely stating that a website could be created, and during that process, certain data such as graphics, hyperlinks, tables, and images can be used to construct the website. But this is simply discussing that a web page can be created with those resources, and does not provide that a user interface is actually provided with the functionality of obtaining image data and preferences from users to be used with displaying images on a display device according to preferences.

2846. Regarding "provide said image data and said preferences to said at least one server system," Dr. Johnson states:

> To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious to use a different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system. For example, as discussed above, a POSITA would have found it obvious to use a different Win98 computer as a user interface configured to obtain image data and said preferences from said user (e.g., the web page developer). Furthermore, as discussed above, a POSITA would have found it obvious to use the different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system. For example, Win98 recognizes the need of its users (e.g., web page developers) to publish their created web pages to a server system on the Internet. Id. at 817 ("When you have created all the pages for your web, you probably will want to publish the pages to a web so that other users can access the pages. Simply saving the pages you've created in FrontPage Express isn't enough, however. You must publish the pages to a specific web.") Thus, it provides a "built-in Web Publishing Wizard" for publishing "HTML pages to any web server." Id. at 13. The Web Publishing Wizard can be "access[ed] from the Start, Programs menu," and it "walks [the user] through the steps of publishing [the user's] pages and creating a starting home page." Id. at 817; see, e.g., Windows 98 Resource Kit at 991-92 ("The Web Publishing Wizard can post to local ISPs, IIS, intranet servers on your local area network, and FrontPage."). The Web Publishing Wizard "guide[s] [the user] through the steps of connecting to [his/her] ISP or intranet site," "determines the protocol needed to copy the files," and "automatically upload[s] Web files from a directory [the user] specif[ies]" "to the appropriate directory on the ISP computer." Id. at 991-92. As discussed above, these web files include image data and preferences.

Johnson ¶1712.

2847. Yet again, Dr. Johnson merely asserts that files can be uploaded as resources in constructing a web page. Dr. Johnson provides no disclosure of a user interface that has the functionality of providing said image data and said preferences to said at least one server system for use by a display device.

2848. Dr. Johnson states: "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious to use a different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system."

Johnson ¶1712. I first note that this appears to be a tacit admission that neither the Stylistic Tablet nor Windows 98 actually disclose this limitation. On that issue I agree with Dr. Johnson.

2849. Dr. Johnson then states: "For example, as discussed above, a POSITA would have found it obvious to use a different Win98 computer as a user interface configured to obtain image data and said preferences from said user (e.g., the web page developer). Furthermore, as discussed above, a POSITA would have found it obvious to use the different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system." Johnson ¶1712.

2850. Dr. Johnson is positing that for some reason a POSITA would want to setup two different Windows 98 computers, and use one to upload website resources. Setting aside the fact that the Stylistic 1000 Tablet did not come with Windows 98, and that Dr. Johnson has not shown that anyone other than himself in 2023 ever put Windows 98 on a Stylistic 1000 Tablet, what Dr. Johnson is positing is needless complexity, and which does not even provide the claimed user interface.

2851. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xi. Claim [2.h] said at least one server system coupled to said at least one frame device via said network,

2852. Regarding "said at least one server system coupled to said at least one frame device via said network," Dr. Johnson merely asserts that the Stylistic Tablet running Win98 can use a feature called "Active Channel" that:

> allows Windows users to subscribe to pre-packaged web contents put together by a webmaster, "just as a newspaper publisher assembles a daily paper." Id. at 692. A user subscribes to an Active Channel Website "by clicking a hyperlink to a Channel Definition Format (CDF) file, which contains subscription information about that channel." Windows 98 Resource Kit at 260. "The CDF file is copied from the

> Active Channel server to the user's computer, and the channel is added to the user's Favorites and Channels in the Internet Explorer browsing software." Id.

Johnson ¶1714.

2853. "Active Channel" simply allows a user to incorporate data from a subscription service.

2854. Dr. Johnson is again conflating what Windows 98 might do if installed on a PC connected to a network, with what Windows 98 can do if installed on the Fujitsu Stylistic PC. A review of the Stylistic 1000 Technical Reference Guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. A POSITA would understand that Windows 98 subscriptions would not work on Windows 98 running on the Fujitsu Stylistic Tablet.

2855. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites a Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[244]

2856. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

[244] Using Windows 98 Platinum Edition, page 968.

xii. Claim [2.i] wherein said at least one server system is configured to generate package data comprising said image data and said preferences

2857. Dr. Johnson points to Windows 98 using IE 4 to access web pages. Johnson ¶1739. As has been discussed previously, Dr. Johnson is ignoring the fact that the Fujitsu Stylistic 1000 did not come with either Windows 98 or a network card, and has not shown that anyone ever added those two items.

2858. Dr. Johnson also again refers to the Active Channel subscription feature of Win98. Johnson ¶1740-41. As I have explained, as the Fujitsu Stylistic 1000 actually came only with a modem, using Windows subscriptions would not be a viable option for the user because a modem such as the PCMCIA modem card that was compatible with the Stylistic Tablet would not have provided an ongoing network connection. A modem requires a dial up connection. Dr. Johnson also discusses the Fujitsu Stylistic 1000 RF, but that is a different model than the Fujitsu Stylistic 1000. Furthermore, the Fujitsu Stylistic 1000 RF was limited to 1.6 megabits per second. This would also make automatic updates/subscriptions slow.

2859. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xiii. Claim [2.j] and to periodically relay said package data comprising said image data and said preferences to said at least one frame device [2.k] when and in response to said at least one frame device automatically initiating communication with said server system and [2.l] said at least one frame device issuing a request for a current one of said package data comprising said image data and said preferences

2860. Dr. Johnson again relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages," and the "Active Channel" feature that he alleges "allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster." Johnson ¶1745-47. This is not image data or

preferences. Furthermore, this does not occur due to a frame device automatically issuing a request. Quite the contrary, the user must take specific steps to subscribe. In fact, Dr. Johnson cites the *Using Windows 98* book: "The dialog box allows a user to 'create a custom schedule, using a dizzying variety of options.'" Johnson ¶1719 (quoting *Using Windows 98* at 689-90).

2861. Dr. Johnson refers to a "subscription tool" in the IE4 browser that he alleges "automatically issues a request for said image data" via an ability to subscribe to a web page that will be updated in the browser at a set time. Johnson ¶1718-20. Specifically, Dr. Johnson points to "Specifically, Win98 provides a web subscription tool in IE4 that automatically directs the computer to send requests to update subscribed web pages." Johnson ¶1718. A POSITA would recognize that this is an update to a web page, which may or may not include images.

2862. Dr. Johnson then points to cascading style sheets asserting these are display preferences. Johnson ¶1722. Even if one agrees with Dr. Johnson that these are display preferences, and I do not agree, the term 'said preferences' is referring to an antecedent. In this case the 'said preferences' is referring to user preferences. The cascading style sheets developed by a web developer are not preferences of the user of the Stylistic Tablet.

2863. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 Technical Reference Guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. Screenshots are provided here:

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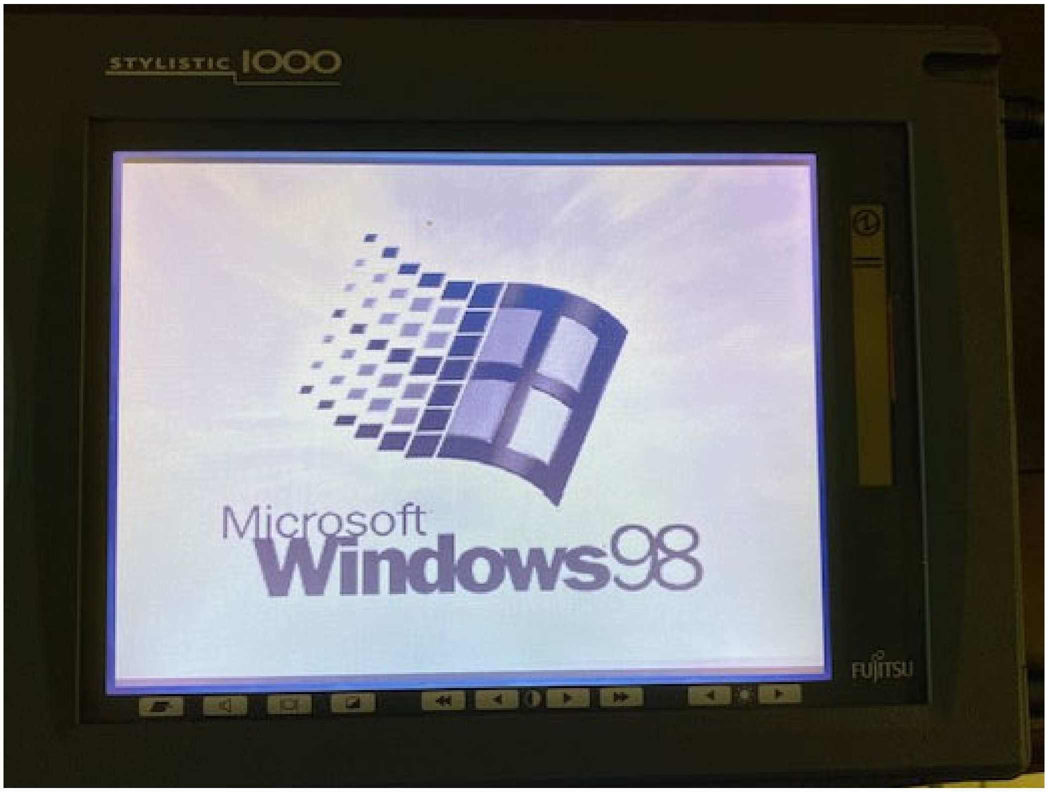

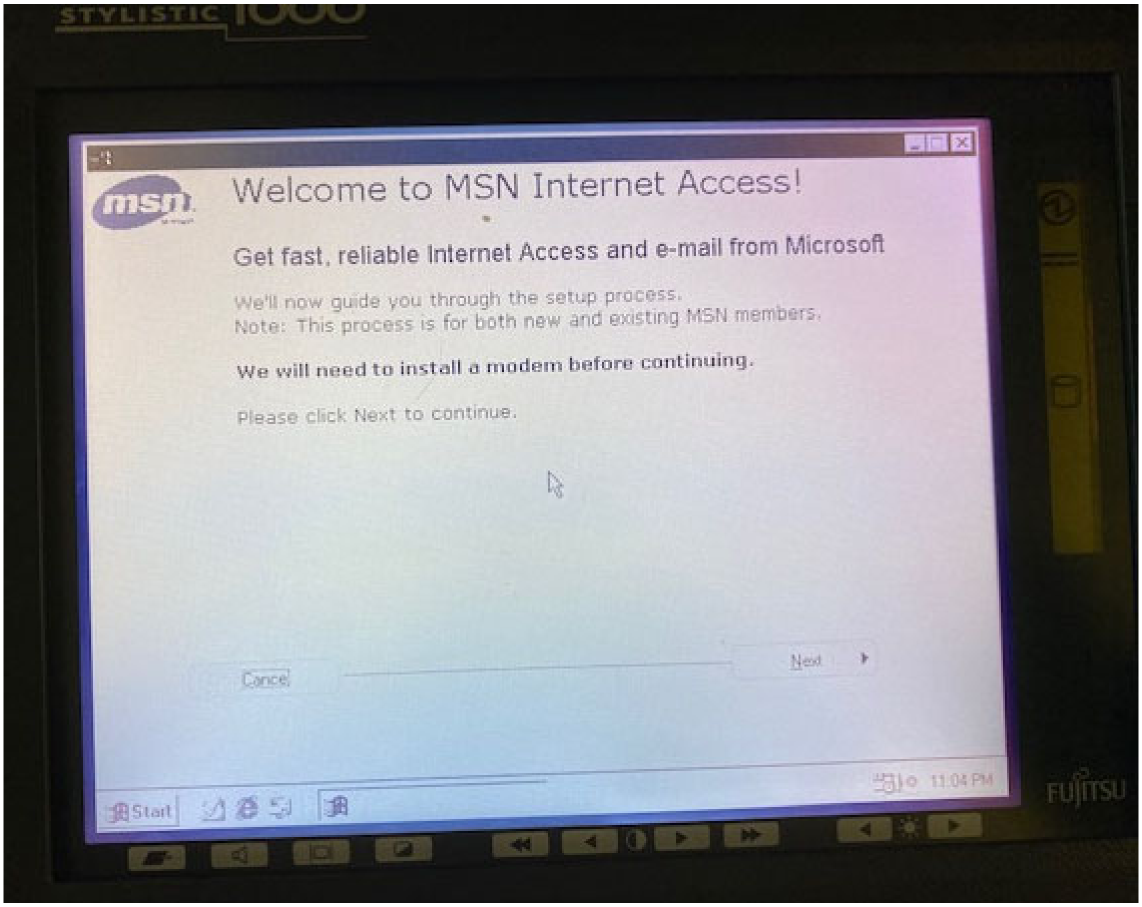

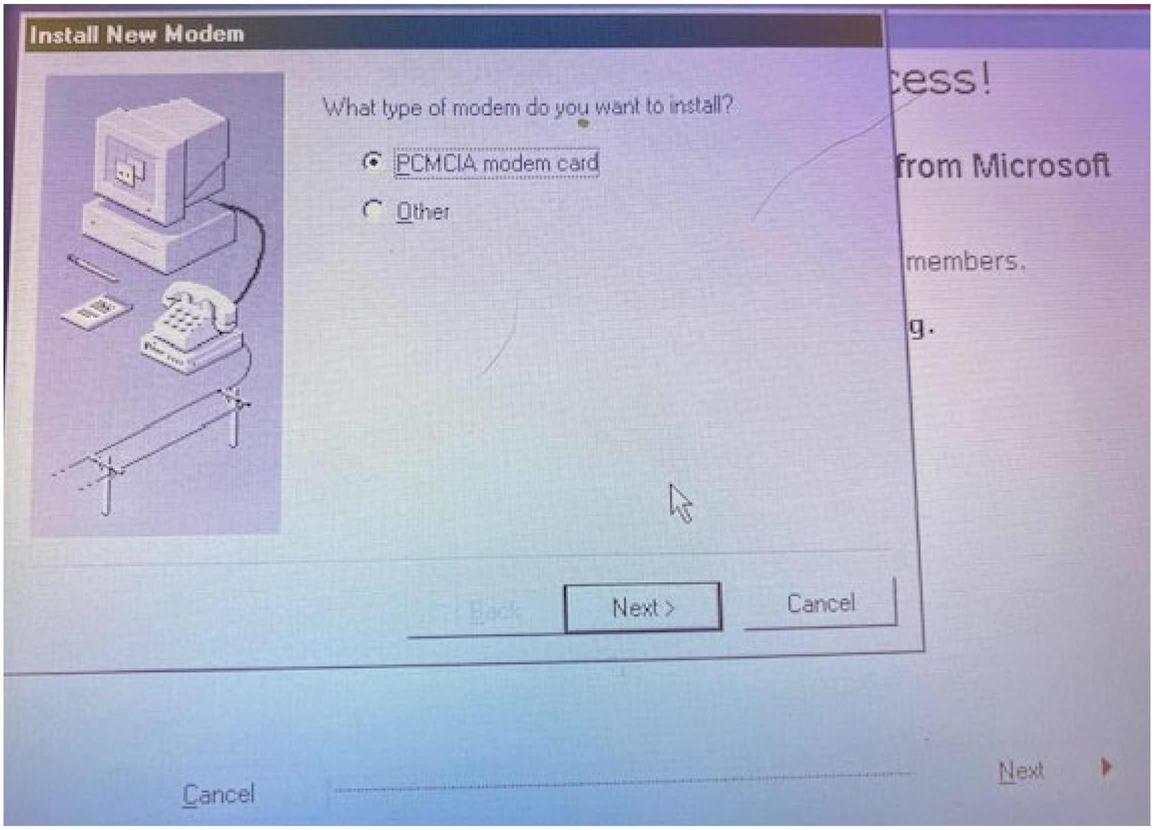

2864. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

2865. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet.

2866. PCMCIA functionality is found in 1-3 of the Stylistic Tablet 1000 Technical Reference Guide produced in this case. Programmable System Functions are found at 4-1. The Fujitsu Tablet does support Infra Red, however that only works with direct line of site.

2867. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xiv. Claim [2.m] wherein said at least one frame device is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in memory of said frame device.

2868. Dr. Johnson asserts that the Stylistic Tablet running Windows 98 fulfills this requirement. Dr. Johnson simply refers to portions of *Using Windows 98* that refer to authentication of websites generally. Johnson ¶1754. The portions of *Using Windows 98* state:

- Authentication. When you connect to a website, how do you know who's really running that server? When you download and run a program, how do you know that it hasn't been tampered with or infected with a virus? When extremely sensitive information is involved, you may want to insist on secure connections guaranteed by digital certificates.

- Encryption. Certain types of data-usernames and passwords, credit card numbers, and confidential banking information, for example-are too sensitive to be sent "in the clear," where they can be read by anyone who can intercept the packets. For these transactions, only secure, encrypted connections are acceptable.

- Control over executable content. The Internet is filled with programs and add-ins that can expand the capabilities of your browser. Unfortunately, poorly written or malicious add-ins can carry viruses, corrupt valuable data, and even expose your network to unauthorized break-ins. On most networks, administrators try to limit the potential for damage by restricting the types of files that users can download and run.[245]

2869. Dr. Johnson also emphasizes that *Using Windows 98* states that IE4 "uses digital certificates to verify the publisher of an ActiveX control before determining how to handle it," and that IE4 can use "Secure Sockets Layer (SSL) over HTTP" and "digital certificates that comply with the X.509 standard" when communicating with web servers. Johnson ¶1754 (quoting *Using Windows 98* at 665-666, 670, 743-734).

[245] Using Windows 98, 654.

2870. I note that Dr. Johnson conflates the Internet Explorer browser reviewing a websites digital certificate for websites that offer such a certificate, with receiving authentication information from said server system.

2871. Also, the claim specifically recites that the claimed authentication is tied to the previous claim step of "periodically relay said package data comprising said image data and said preferences to said at least one frame device when and in response to said at least one frame device automatically initiating communication with said server system." Again, for that claim step, Dr. Johnson relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages," and the "Active Channel" feature that he alleges "allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster." Johnson ¶1745-47. There is no evidence that these subscription features include authentication as part of their processes, nor that these subscription features used ActiveX control or anything else the general description of authentication in Windows 98 is referring to. Moreover, Dr. Johnson makes no attempt to explain how *Using Windows 98*'s general description of supporting authentication is tied to these other subscription features. Therefore, even if the Stylistic Tablet could be combined with Win98, there is no suggestion that these subscription tools that form the basis for most of Dr. Johnson's positions for previous claim elements use or require authentication before receiving subscription content.

2872. Also, I again emphasize here that SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices (e.g., devices other than powerful desktop computers).[246]

[246] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[247] Given those challenges still existed in 2004, Dr. Johnson's report is deficient also because he does not attempt to analyze or evaluate in any way how SSL or TLS might behave or perform on smaller device like the Stylistic Tablet.

2873. RFC 2246, which describes X.509 digital certificates, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38.

2874. Dr. Johnson does not address how the subscription services allegedly provided by Windows 98 would use or be modified to use digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. The subscription services Dr. Johnson relies on receive content from websites, but there would be no way to force servers serving such website content to use digital certificates. For at least these reasons, Dr. Johnson's analysis is deficient.

2875. Further, Dr. Johnson ignores that network authentication only applies if one wishes to authenticate to a particular network. Windows 98 will allow the user to login locally and use the full functionality of Windows 98 without authenticating to any network. The Fujitsu Stylistic

[247] *Id.*

Tablet is designed to work without any network or remote server. In fact, the only way one could connect to any network or server is to first purchase a separate PCMCIA modem, install that modem, then dial into a network whenever a connection is desired. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card.

2876. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

2877. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xv. Claim [6.] The system of claim 1 wherein input to said user interface is permitted when said user is authenticated by said at least one server system.

2878. Dr. Johnson refers to a portion of *Using Windows 98* that describes a scenario in which IE4 allows a user to log in to gain access to password-protected websites. Johnson ¶1772.

2879. Dr. Johnson further states "to the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious for a web page developer (i.e., "said user") to use a different Win98 computer as a user interface wherein input to said user interface is permitted when said user is authenticated by said at least one server system." Johnson ¶1772. I first note that this appears to be a tacit admission that neither the Stylistic Tablet nor Windows 98 actually disclose this limitation. On that issue I agree with Dr. Johnson.

2880. I note again that Dr. Johnson is positing that for some reason a POSITA would want to setup two different Windows 98 computers. Setting aside the fact that the Stylistic 1000 Tablet

did not come with Windows 98, and that Dr. Johnson has not shown that anyone other than himself in 2023 ever put Windows 98 on a Stylistic 1000 Tablet, what Dr. Johnson is positing is needless complexity.

2881. Dr. Johnson then states: "For example, Win98 discloses if a user's computer is connected to a network, Windows will display an "Enter Network [ ] Password dialog box" to authenticate the user to the network server before the user is allowed to use the Windows interface." Johnson ¶1772 (citing *Using Windows 98* at 16). Dr. Johnson also states: "Further, "[a]n additional field might be displayed in the dialog box for a Windows NT Domain or other server name," and "[i]ndeed, Win98 recognizes the importance of user authentication in protecting network servers from unauthorized access." Johnson ¶1772 (citing *Using Windows 98* at 16, 919). Dr. Johnson also refers to a portion of *Using Windows 98* that describes that a user ID and password can be used for password-protected sites when updating subscriptions. Johnson ¶1773.

2882. Dr. Johnson is ignoring the rest of the claim. With respect to the claimed "user interface" that is "configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system," Dr. Johnson previously made the argument that, essentially, although Stylistic Tablet and Win98 do not provide a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device, someone could use Win98 tools such as the "Web Publishing Wizard" to make one, such as by creating a web page. Johnson ¶1708-12. As I noted, this is clearly grasping at straws. This is akin to saying that any computer program is obvious because there exist programming Integrated Development Environments (IDEs) that can be used to make any program a user wishes to make. But the user interface Dr. Johnson proposes to be built would need to have particular functionality to meet the claim elements of the Patents-

in-Suit, including obtaining image data and said preferences from said user and providing said image data and said preferences to said at least one server system, and Dr. Johnson has not shown that to be the case.

2883. Dr. Johnson asserts that, because *Using Windows 98* supposedly discloses that Windows 98 could be set up to ask for a user login at startup, or to use website logins as part of the subscription services, neither of these have anything to do with the "Web Publishing Wizard" that Dr. Johnson previously alleged was the user interface.

2884. Also, with Windows 98, input to said user interface is allowed even if one does not authenticate to the network. One can use Windows 98 without logging into a network. In fact, the Fujitsu Stylistic Tablet running Windows 98 did not require even authenticating locally. It simply started up without any authentication at all.

2885. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xvi. Claim [19.pre] A system for distributing image data comprising:

2886. For this claim limitation, Dr. Johnson merely refers back to section XI.D.1.f(1). However, that claim limitation in turn only refers to section XI.D.1.b(1). That section in turn refers to section XI.D.1.a(1). That discussion begins on paragraph 1693 of Dr. Johnson's report.

2887. Dr. Johnson again discusses the Internet Explorer browser. As has been discussed repeatedly in this report, a web browser allows one to view a web page. That web page may or may not have images.

2888. Dr. Johnson then states: "Thus, a POSITA would have understood that Stylistic Tablet running Win98 and accessing HTML documents on web page servers on the Internet constitutes a system for distributing image data." Johnson ¶1697.

2889. I disagree. A POSITA would have understood that, as even Dr. Johnson describes them, HTML are documents. Those documents may or may not contain images.

2890. Specifically, Dr. Johnson asserts that the Stylistic Tablet running Win98 is a "system for distributing image data" because, using Win98, the Stylistic Tablet could run a web browser, Internet Explorer 4, to display Internet web pages. Johnson ¶1693-97. This is not a system for distributing image data as a POSITA would understand it from the Patents-in-Suit. As I explained in Section VI summarizing the Patents-in-Suit, the Patents-in-Suit sought to alleviate various problems in the prior art with respect to display devices and their usability. It is apparent from the disclosures of the Patents-in-Suit that they did not seek to merely create a small form factor general computing/Windows device - these devices, such as Windows laptops, were commonplace in the 1990s.

2891. Dr. Johnson ignores the express descriptions in the Patents-in-Suit of the problems the inventors were attempting to solve, such as (1) that prior systems required a user to "know how to navigate around the operating system and how to use the program utilized to obtain the data," and (2) that, to disseminate data using client pull, the client computer must include information about the data to be disseminated in the request, such as having to specifically identify in the request the content to be downloaded. *See, e.g.*, '930 Patent at 5:10-21. A general purpose Windows computer would not address any of the problems identified in the Patents-in-Suit.

2892. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xvii. Claim [19.a] at least one digital picture frame

2893. For this claim limitation, Dr. Johnson simply refers back to his analysis regarding claim element [1a]. Johnson ¶1795. In reference to that claim limitation, Dr. Johnson claims the Stylistic Tablet combined with Win98 meets what he alleges to be a definition of a frame device

in the ’573 Patent at 6:35-39. Johnson ¶¶1698-1702. That section of the ’573 Patent states: “The present invention comprises one or more interconnected frame devices. A frame device is a self-configuring digital picture frame that obtains images for display from a repository of that may be accessed via an interconnection fabric (e.g., a computer network).” ’573 Patent at 6:34-39.

2894. Dr. Johnson argues that, using Win98, the Stylistic Tablet can download web pages from the Internet, and alleges this means the Stylistic Tablet can obtain images for display from a repository. Johnson ¶1702. Web pages are served from various web servers hosted by various entities and, while web pages can include images as part of the web page, this would not be understood to be a repository as described in the Patents-in-Suit. For example, the repository in the Patents-in-Suit is described as “a centralized repository” that is “populated with image data via the image collection process,” *see, e.g.*, ’573 Patent at Abstract, and “stores information used to control the content distributed to and from each frame” such as data about each user and the preferences associated with that user.” *See, e.g.*, ’573 Patent at 19:6-15.

2895. Web servers serving web pages would not include these features described in the Patents-in-Suit.

2896. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xviii. Claim [19.c] configured to operate according to preferences defined by a user,

2897. For this claim limitation, Dr. Johnson again simply refers back to earlier claim limitations. Johnson ¶1797. Dr. Johnson asserts: “The specification of the ’573 Patent does not describe what it means to operate a frame device according to preferences defined by a user.” Johnson ¶2044. This is incorrect. Beginning in the Background of the ’573 Patent, the inventor describes what prior art could not do according to user preferences “Additionally, the receiver

cannot control which images may be displayed and the frequency with which those images are displayed cannot be set based on the receiver's preferences." '573 Patent at 4:4-6. This is also described in other parts of the '573 Patent: "Current electronic mail systems cannot, for example, automatically connect to an image source, obtain image data for display, and then automatically display the image data according to a set of predetermined preferences." '573 Patent at 3:40-43.

2898. A POSITA would readily understand that the inventor is differentiating the '573 Patent from prior art in part due to prior art not being able to automatically display image data according to predetermined preferences that describe the images to be displayed and the frequency of display.

2899. This is then later contrasted with what the '573 Patent's invention can do "Each frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences. For example, a frame device may dynamically obtain image data from a networked data source (e.g., a client computer), store that data, and then display that data according to criteria established by an authorized user." '573 Patent at 8:35-41. A POSITA would understand that at least one user preference that governs the operation of the framed device is the display of images, including the frequency of such display.

2900. Dr. Johnson makes contradictory statements. Dr. Johnson states: "The specification does not disclose the frame device operating 'according to preferences defined by a user.' Thus, in my opinion, the claims lack support in the written description." Johnson ¶2044. Dr. Johnson also states, "A POSITA would not have understood, without undue experimentation, how to practice the limitation 'operate according to preferences defined by a user' in view of the '573 Patent." Johnson ¶2031. But elsewhere in his report, Dr. Johnson states: "Stylistic Tablet running Win98 discloses a digital picture frame configured to operate according to preferences

defined by a user." Johnson ¶¶1703, 1758, 1797. It is unclear how Dr. Johnson can determine that the Stylistic Tablet running Windows 98 discloses a limitation and at the same time maintain that the '573 Patent does not disclose the limitation with sufficient description.

2901. In paragraph 1703 of his report. Dr. Johnson points to the Active Channel feature in Windows 98 as meeting this claim limitation. In that same paragraph, Dr. Johnson states: "POSITA would have understood that 'multiple HTML files' and 'graphics' constitute preferences defined by the web page developer who composes the CDF file." Even if one agrees with Dr. Johnson, and I do not, these are not user preferences. They are the preferences of some web page developer who has no connection with the Stylistic Tablet running Windows 98.

2902. Dr. Johnson then points to Windows 98 Active Desktop. Johnson ¶1705. However, a POSITA would readily understand that selecting some graphic element such as a background or screen saver is not configured to operate according to preferences defined by a user.

2903. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xix. Claim [19.e] a user interface coupled to at least one server system via a network [19.f] wherein said user interface is physically separable from said at least one digital picture frame [19.g] and configured to obtain image data and said preferences from said user [19.h] and provide said image data and said preferences to said at least one server system;

2904. For this claim limitation, Dr. Johnson again simply points back to earlier claims, and states that the Stylistic Tablet running Windows 98 discloses this limitation. Johnson ¶¶1799-1802.

2905. As I explained with respect to Claims 2 and 6, Dr. Johnson states: "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious for a user (e.g., a web page developer) to use a different Win98 computer as a user interface

coupled to at least one server system (e.g., a web page server) via a network (e.g., the Internet) wherein said user interface is physically separable from said at least one frame device (e.g., the Stylistic Tablet running Win98).” Johnson ¶1708. I agree with Dr. Johnson that Stylistic Tablet and Win98, along or combined, does not provide a user interface coupled to at least one server system via a network wherein said user interface is physically separable from at least one frame device.

2906. Dr. Johnson asserts it would be obvious to provide such a user interface because:

> For example, as detailed below, Win98 provides user interface tools for web page developers to create web pages according to their preferences and to publish their created web pages on the Internet. For example, Win98 includes FrontPage Express, which “is a near-WYSIWYG HTML page editor that enables [web page developers] to build pages to be viewed in a web browser over either the Internet or local corporate intranets.” *Using Windows 98* at 780. “In HTML special character codes are inserted into a text file to generate particular effects, such as bold or the appearance of a graphic, a hyperlink, or a table. When a browser opens a page, the browser reads and then translates the HTML into the text and images [a Windows end-users] see onscreen.” Id.
>
> Using FrontPage Express, a user can create a web page with inserted images in either the GIF format or the JPEG format “from two different sources: from a file on your computer or network or from another site on the web.” Id. at 800-01. Once an image is added to the web page, a user may further define display preferences such as managing the size of the image or adding a hyperlink to the image. Id. at 802-03.
>
> Win98 recognizes the need of its users to publish their created web pages to server systems on the Internet. Id. at 817 (“When you have created all the pages for your web, you probably will want to publish the pages to a web so that other users can access the pages. Simply saving the pages you've created in FrontPage Express isn't enough, however. You must publish the pages to a specific web.”). Thus, it provides a “built-in Web Publishing Wizard” for publishing “HTML pages to any web server.” Id. at 13. The Web Publishing Wizard can be “access from the Start, Programs menu,” and it “walks [the user] through the steps of publishing [the user’s] pages and creating a starting home page.” Id. at 817; see, e.g., Windows 98 Resource Kit at 991-92 (“The Web Publishing Wizard can post to local ISPs, IIS, intranet servers on your local area network, and FrontPage.”). The Web Publishing Wizard “guide[s] [the user] through the steps of connecting to [his/her] ISP or intranet site,” “determines the protocol needed to copy the files,” and “automatically upload Web files from a directory [the user] specify” “to the appropriate directory on the ISP computer.” Windows 98 Resource Kit at 991-92.

Johnson ¶¶1708-10.

2907. Essentially, Dr. Johnson asserts that, although Stylistic Tablet and Win98 do not provide a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one frame device, someone could use Win98 tools to make one, such as by creating a web page. This is clearly grasping at straws. This is akin to saying that any computer program is obvious because there exist programming Integrated Development Environments (IDEs) that can be used to make any program a user wishes to make. But the user interface Dr. Johnson proposes to be built would need to have particular functionality to meet the claim elements of the Patents-in-Suit, including obtaining image data and said preferences from said user and providing said image data and said preferences to said at least one server system, and Dr. Johnson has not shown that to be the case.

2908. For example, regarding "and configured to obtain image data and said preferences from said user," Dr. Johnson states:

> To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious to use a different Win98 computer as a user interface configured to obtain image data and said preferences from said user (e.g., the web page developer as discussed above). For example, as discussed above, Win98 includes FrontPage Express "that enables [web page developers] to build pages to be viewed in a web browser over either the Internet or local corporate intranets." *Using Windows 98* at 780. "In HTML special character codes are inserted into a text file to generate particular effects, such as bold or the appearance of a graphic, a hyperlink, or a table. When a browser opens a page, the browser reads and then translates the HTML into the text and images [a Windows end-users] see onscreen." *Id*. Thus, using FrontPage Express, a web page developer can create a web page with images in either the GIF format or the JPEG format "from two different sources: from a file on your computer or network or from another site on the web." Id. at 800-01. Once an image is added to the web page, a user may further define display preferences such as managing the size of the image or adding a hyperlink to the image. Id. at 802-03. Furthermore, web page developers may further specify web page display preferences using, for example, cascading style sheets (CSS). See, e.g., Id. at 615 ("Sophisticated designers, on the other hand, use web templates called cascading style sheets to specify fonts, colors, spacing, and other design elements that control the look and feel of the page."); Windows 98 Resource Kit at 953 ("Web authors can position elements to make sites look as they want them to.

> The Internet Explorer browsing software supports cascading style sheets (CSS) positioning, or the ability to position HTML elements in x- and y- coordinates, and the z-plane.").

Johnson ¶1711.

2909. Again, Dr. Johnson is merely stating that a website could be created, and during that process, certain data such as graphics, hyperlinks, tables, and images can be used to construct the website. But this is simply discussing that a web page can be created with those resources, and does not provide that a user interface is actually provided with the functionality of obtaining image data and preferences from users to be used with displaying images on a display device according to preferences.

2910. Regarding "provide said image data and said preferences to said at least one server system," Dr. Johnson states:

> To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious to use a different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system. For example, as discussed above, a POSITA would have found it obvious to use a different Win98 computer as a user interface configured to obtain image data and said preferences from said user (e.g., the web page developer). Furthermore, as discussed above, a POSITA would have found it obvious to use the different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system. For example, Win98 recognizes the need of its users (e.g., web page developers) to publish their created web pages to a server system on the Internet. Id. at 817 ("When you have created all the pages for your web, you probably will want to publish the pages to a web so that other users can access the pages. Simply saving the pages you've created in FrontPage Express isn't enough, however. You must publish the pages to a specific web.") Thus, it provides a "built-in Web Publishing Wizard" for publishing "HTML pages to any web server." Id. at 13. The Web Publishing Wizard can be "access[ed] from the Start, Programs menu," and it "walks [the user] through the steps of publishing [the user's] pages and creating a starting home page." Id. at 817; see, e.g., Windows 98 Resource Kit at 991-92 ("The Web Publishing Wizard can post to local ISPs, IIS, intranet servers on your local area network, and FrontPage."). The Web Publishing Wizard "guide[s] [the user] through the steps of connecting to [his/her] ISP or intranet site," "determines the protocol needed to copy the files," and "automatically upload[s] Web files from a directory [the user] specif[ies]" "to the appropriate directory on the ISP computer." Id. at 991-92. As discussed above, these web files include image data and preferences.

Johnson ¶1712.

2911. Yet again, Dr. Johnson merely asserts that files can be uploaded as resources in constructing a web page, but not a user interface that has the functionality of providing said image data and said preferences to said at least one server system for use by a display device.

2912. Dr. Johnson further states "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious to use a different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system." Johnson ¶1712. I first note that this appears to be a tacit admission that neither the Stylistic Tablet nor Windows 98 actually disclose this limitation. On that issue I agree with Dr. Johnson.

2913. Dr. Johnson then states: "For example, as discussed above, a POSITA would have found it obvious to use a different Win98 computer as a user interface configured to obtain image data and said preferences from said user (e.g., the web page developer). Furthermore, as discussed above, a POSITA would have found it obvious to use the different Win98 computer as a user interface to provide said image data and said preferences to said at least one server system." Johnson ¶1712.

2914. Dr. Johnson is positing that for some reason a POSITA would want to setup two different Windows 98 computers and use one to upload website resources. Setting aside the fact that the Stylistic 1000 Tablet did not come with Windows 98, and that Dr. Johnson has not shown that anyone other than himself in 2023 ever put Windows 98 on a Stylistic 1000 Tablet, what Dr. Johnson is positing is needless complexity, and which does not even provide the claimed user interface.

2915. Dr. Johnson again points to the Windows 98 Active Channel stating a "POSITA would have understood that "multiple HTML files" and "graphics" constitute preferences defined by the web page developer who composes the CDF file." Johnson ¶1730. Even if one agrees with

Dr. Johnson, and I do not, these are not user preferences. They are the preferences of some web page developer who has no connection with the Stylistic Tablet running Windows 98.

2916. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xx. Claim [19.j] wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one digital picture frame when said at least one digital picture frame automatically issues a request for said image data

2917. For this claim limitation, Dr. Johnson states: "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious wherein said at least one server system is configured to periodically relay said image data and said preferences to said at least one digital picture frame when said at least one digital picture frame automatically issues a request for said image data. See above (e.g., Section XI.D.1.d.(10))." Johnson ¶1804.

2918. I first note that the statement "To the extent not explicitly disclosed by Stylistic Tablet running Win98" appears to be a tacit admission that the Stylistic Tablet running Windows 98 does not disclose this claim limitation. On that point, I agree with Dr. Johnson.

2919. The portion of Dr. Johnson's report being references is claim 4i. That claim is discussed in paragraph 1765 and all that is stated by Dr. Johnson is "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious that said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data. See above (e.g., Section XI.D.1.a.(9))."

2920. I first note that the statement "To the extent not explicitly disclosed by Stylistic Tablet running Win98" appears to be a tacit admission that the Stylistic Tablet running Windows 98 does not disclose this claim limitation. On that point, I agree with Dr. Johnson.

2921. The section of his report Dr. Johnson is referring to is claim [1.i], which begins at paragraph 1717. This section begins with Dr. Johnson stating "To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious that said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data." Johnson ¶1717

2922. I first note that the statement "To the extent not explicitly disclosed by Stylistic Tablet running Win98" appears to be a tacit admission that the Stylistic Tablet running Windows 98 does not disclose this claim limitation. On that point, I agree with Dr. Johnson.

2923. Dr. Johnson refers to a "subscription tool" in the IE4 browser that he alleges "automatically issues a request for said image data" via an ability to subscribe to a web page that will be updated in the browser at a set time. Johnson ¶1718-20. Dr. Johnson asserts that "Specifically, Win98 provides a web subscription tool in IE4 that automatically directs the computer to send requests to update subscribed web pages." Johnson ¶1718. A POSITA would recognize that this is an update to a web page, which may or may not include images. This is not image data or preferences. Furthermore, this does not occur due to a frame device automatically issuing a request. Quite the contrary, the user must take specific steps to subscribe. In fact, Dr. Johnson cites the *Using Windows 98* book: "The dialog box allows a user to 'create a custom schedule, using a dizzying variety of options'" Johnson ¶1719 (quoting *Using Windows 98* at 689-90.)

2924. Dr. Johnson then points to cascading style sheets asserting these are display preferences. Johnson ¶1722. Even if one agrees with Dr. Johnson that these are display preferences, and I do not agree, the term "said preferences" is referring to an antecedent. In this

case the ‘said preferences’ is referring to user preferences discussed in claim 19c and 19g. The cascading style sheets developed by a web developer are not preferences of the user of the Stylistic Tablet.

2925. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

2926. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

2927. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet.

2928. The Fujitsu Stylistic Tablet has no mechanism to periodically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem.

2929. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead he cites a Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the Using Windows 98 book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it “should be considered for only the most basic operations.”[248]

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[248] Using Windows 98 Platinum Edition, page 968.

2930. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

xxi. Claim [19.k] and wherein said at least one digital picture frame is configured to obtain an update for said operating system software from said at least one server system.

2931. For this claim limitation, Dr. Johnson states: "Stylistic Tablet running Win98 discloses wherein said at least one digital picture frame is configured to obtain an update for said operating system software from said at least one server system. See above (e.g., Section XI.D.1.d.(12))." Johnson ¶1805.

2932. That section of Dr. Johnson's report begins on paragraph 1769. Dr. Johnson points to the Windows Update Wizard. As has been discussed previously in this report, the frame is not configured to obtain an update. A user must manually update the system. The book *Using Windows 98 Platinum Edition*[249] has a section on updating Windows 98. That section is three pages long (pages 292 to 294) with multiple steps. These steps must be executed by a user:

A. Click Start and click the Windows Update icon. Internet Explorer comes up automatically and attempts to connect to Microsoft Windows Update site shown in figure 16.1.

B. Click on Update Wizard. A registration wizard pops up if this is the first time you have used the Update Wizard (see figure 16.2). You must fill out the registration to continue. Part of the registration is to upload your configuration files to Microsoft. You can deselect a check box, so this doesn't happen if you want to.

C. The Update Wizard web page contains two options. Update and Restore. Click Update to scan the internet for updated system files. A new Internet Explorer window pops

[249] Bott, E., & Person, R. (1998). *Using Microsoft Windows 98 with Cdrom*. Que Corp.

up, as shown in figure 16.3. The update Wizard loads necessary components into your system and then scans the database for updated drivers.

D. As updates are found the wizard refreshes the screen and the list of files available for update. Select a file in the list on the left to see its description as well as its size, and approximate download time on the right side of the main windows.

E. Click on Install to install the file. Only one file can be installed at a time, and your computer may need to be restarted after a file is installed. Let the computer restart if necessary, before downloading a second update in order to verify that it is still working properly.

2933. The section goes on to discuss the various problems that can arise when updating Windows 98. But even if everything goes smoothly, an operating system consists of numerous individual files and applications. Windows 98 required a user to individually download and install these one at a time, with potentially numerous pauses to restart the system.

2934. In fact, Dr. Johnson's report goes through the process with screenshots beginning on page 567 of his report and continuing through page 571. This is not something the device is configured to do. Rather it is a lengthy and manual process the user must do.

2935. I note that again, Dr. Johnson does not conclude this section by even asserting that he believes this claim limitation is rendered obvious, nor by what he might believe it is rendered obvious (i.e., Windows 98 alone, Windows 98 combined with something, etc.).

2936. This is further exacerbated by the fact that a user would need to first add a PCMCIA modem to the Fujitsu Stylistic Tablet, then manually dial in to a network. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference

to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

2937. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

2938. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet.

2939. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

2. Claims 1, 3, 4, 7, and 8 of the '930 Patent are valid in view of Stylistic Tablet in combination with Win98

2940. It should first be noted that the combination of the Stylistic Tablet with Windows 98 is entirely speculative. The Stylistic Tablet did not ship with Windows 98 and Dr. Johnson has not shown that anyone, other than himself in 2023, has ever installed Windows 98 on a Fujitsu Stylistic Tablet.

2941. At no point does Dr. Johnson assert that the Stylistic 1000 Tablet running Windows 95 anticipates or renders obvious the asserted claims of the Patents-in-Suit. In fact, one of Dr. Johnson's own citations states, "The Stylistic 1000 RF also carries the 'Designed for Microsoft Windows 95' logo and is configured with the Microsoft Pen Services 2.0 interface."[250] Thus, all of Dr. Johnson's positions require the use of Windows 98 with the Stylistic Tablet. To use

[250] https://web.archive.org/web/19970623222934/http://www.fpsi.fujitsu.com/market/ST1ORFPS.HTM

Windows 98 on the Stylistic Tablet device (either the 1000 or the 1000RF) would mean to use it in a manner it was not designed for.

i. Claim [1.d] security information comprising authentication information for a first remote server system

2942. Dr. Johnson asserts that the Stylistic Tablet running Windows 98 fulfills this requirement. However, Dr. Johnson simply refers to portions of *Using Windows 98* that refer to authentication of websites generally. Johnson ¶¶1818-19. The portions of *Using Windows 98* state:

- Authentication. When you connect to a website, how do you know who's really running that server? When you download and run a program, how do you know that it hasn't been tampered with or infected with a virus? When extremely sensitive information is involved, you may want to insist on secure connections guaranteed by digital certificates.

- Encryption. Certain types of data-usernames and passwords, credit card numbers, and confidential banking information, for example-are too sensitive to be sent "in the clear," where they can be read by anyone who can intercept the packets. For these transactions, only secure, encrypted connections are acceptable.

- Control over executable content. The Internet is filled with programs and add-ins that can expand the capabilities of your browser. Unfortunately, poorly written or malicious add-ins can carry viruses, corrupt valuable data, and even expose your network to unauthorized break-ins. On most networks, administrators try to limit the potential for damage by restricting the types of files that users can download and run.[251]

2943. Dr. Johnson also emphasizes that *Using Windows 98* states that IE4 "uses digital certificates to verify the publisher of an ActiveX control before determining how to handle it," and that IE4 can use "Secure Sockets Layer (SSL) over HTTP" and "digital certificates that comply with the X.509 standard" when communicating with web servers. Johnson ¶1818-1819 (quoting *Using Windows 98* at 665-666, 670, 743-734).

[251] Using Windows 98, 654.

2944. I note that Dr. Johnson conflates the Internet Explorer browser reviewing a website's digital certificate for websites that offer such a certificate, with receiving authentication information from said server system.

2945. Also, the authentication information is related to the later claim step of "an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system," and thus to the remote connection function claim element that includes sending a request for image data. For that later claim step, Dr. Johnson refers back to his discussion of claim 2 of the '573 Patent, where he relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages," and the "Active Channel" feature that he alleges "allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster." Johnson ¶¶1745-47. There is no evidence that these subscription features include authentication as part of their processes, nor that these subscription features used ActiveX control or anything else the general description of authentication in Windows 98 is referring to. Moreover, Dr. Johnson makes no attempt to explain how *Using Windows 98*'s general description of supporting authentication is tied to these other subscription features. Therefore, even if the Stylistic Tablet could be combined with Win98, there is no suggestion that these subscription tools that form the basis for most of Dr. Johnson's positions for previous claim elements use or require authentication before receiving subscription content.

2946. Also, I again emphasize here that SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices (e.g., devices other than powerful desktop computers).[252]

[252] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[253] Given those challenges still existed in 2004, Dr. Johnson's report is deficient also because he does not attempt to analyze or evaluate in any way how SSL or TLS might behave or perform on smaller device like the Stylistic Tablet.

2947. RFC 2246, which describes X.509 digital certificates, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38.

2948. Dr. Johnson does not address how the subscription services allegedly provided by Windows 98 would use or be modified to use digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. The subscription services Dr. Johnson relies on receive content from websites, but there would be no way to force servers serving such website content to use digital certificates. For at least these reasons, Dr. Johnson's analysis is deficient.

2949. Further, Dr. Johnson ignores that network authentication only applies if one wishes to authenticate to a particular network. Windows 98 will allow the user to login locally and use the full functionality of Windows 98 without authenticating to any network.

[253] *Id.*

2950. Dr. Johnson's reference to Internet Explorer using digital certificates conflates the Internet Explorer browser reviewing a websites digital certificate for websites that offer such a certificate, with receiving authentication information from said server system.

2951. The Fujitsu Stylistic Tablet is designed to work without any network or remote server. In fact, the only way one could connect to any network or server is to first purchase a separate PCMCIA modem, install that modem, then dial into a network whenever a connection is desired. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. A review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

2952. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

2953. The Fujitsu Stylistic Tablet has no mechanism to periodically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem.

2954. Furthermore, the Fujitsu Stylistic Tablet running Windows 98 does not require one to authenticate even locally. The system boots directly into Windows 98 without any authentication required.

2955. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

ii. Claim [1.e] and a unique identifier for said digital display apparatus,

2956. For this claim limitation Dr. Johnson points to the user ID in Windows 98. Johnson ¶1820. However, as has been discussed elsewhere in this report, the user ID uniquely identifies a user, not the device. In fact, the same user can logon to the network from other devices, using the user ID. And in fact, several different users can logon to the same device each using a different user ID.

2957. Dr. Johnson then turns his attention to digital certificates stating "IE4 can use a personal certificate stored in memory of the computer to access secured web pages automatically." Johnson ¶1821. Again Dr. Johnson is overlooking the fact that this is a personal certificate, it identifies the person, not the device.

2958. Dr. Johnson then states: "Furthermore, upon setting up Win98, the user is asked to "enter a name and description for [the user's] computer." Johnson ¶1824 (quoting Getting Started Microsoft Windows 98 at 32). "If [the user's] computer is connected to a network, this information identifies [the user's] computer to other users." Johnson ¶1824.

2959. Dr. Johnson also states: "Furthermore, the hard drive of the Stylistic Tablet running Win98 has a "serial number" that could be displayed using an Internal Command "VOL." Johnson ¶1825 (quoting *Using Windows 98* at 1022-23). Such a unique identifier could also be used for device identification purposes." Johnson ¶1826. This ignores the purpose of the unique identifier in the claim limitations. That identifier must actually be used to identify the device as specified in the patent. For example "Once the session is established, frame device 200 transmits a unique identifier (e.g. user/frameID). Package server 271 responds by prompting frame device 200 for password information, which the frame then transmits." '930 Patent at 17:47-50. Dr. Johnson does not even suggest that the hard drive serial number is ever transmitted.

2960. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

iii. Claim [1.f] and a current version of onboard software;

2961. As I have described, there are various issues with running Windows 98 on the Stylistic Tablet. Dr. Johnson does not assert that Windows 95, the operating system that actually comes with the Stylistic Tablet, meets this claim limitation.

2962. For at least those reasons, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim.

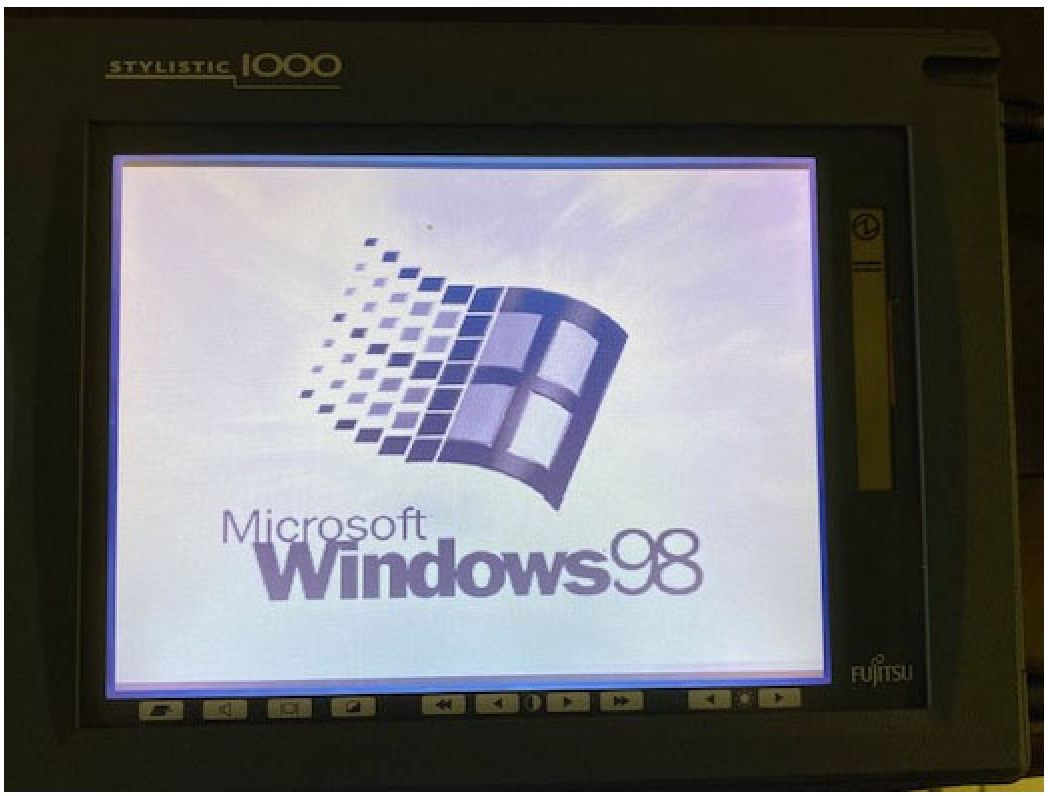
iv. Claim [1.j] a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, [1.k] said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications [1.l] and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files;

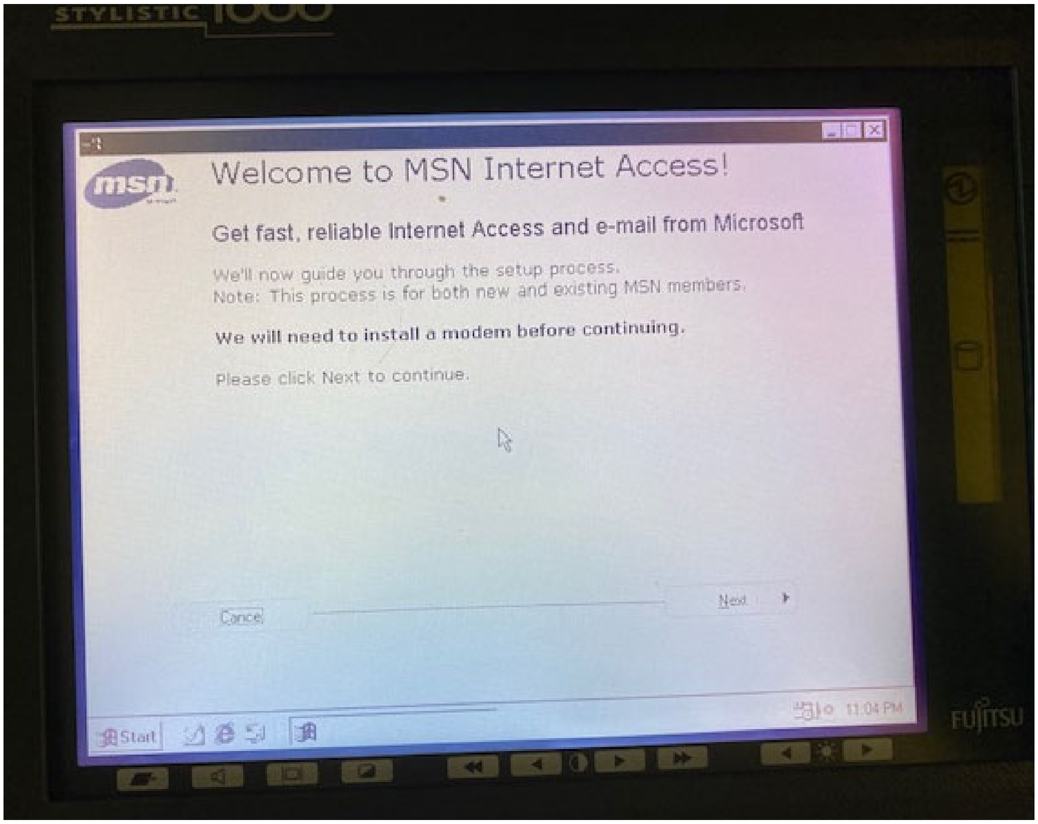
2963. For these elements, Dr. Johnson refers back to his discussion of Claim 2 of the ’573 Patent. Johnson ¶1835-38. Dr. Johnson again relies on the subscription tool of IE4 that he alleges “automatically directs the computer to send requests to update subscribed web pages,” and the “Active Channel” feature that he alleges “allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster.” Johnson ¶¶1745-47. This is not image data or preferences. Furthermore, this does not occur due to a frame device automatically issuing a request. Quite the contrary, the user must take specific steps to subscribe. In fact, Dr. Johnson cites the *Using Windows 98* book: “The dialog box allows a user to ‘create a custom schedule, using a dizzying variety of options.’” Johnson ¶1719 (quoting *Using Windows 98* at 689-90).

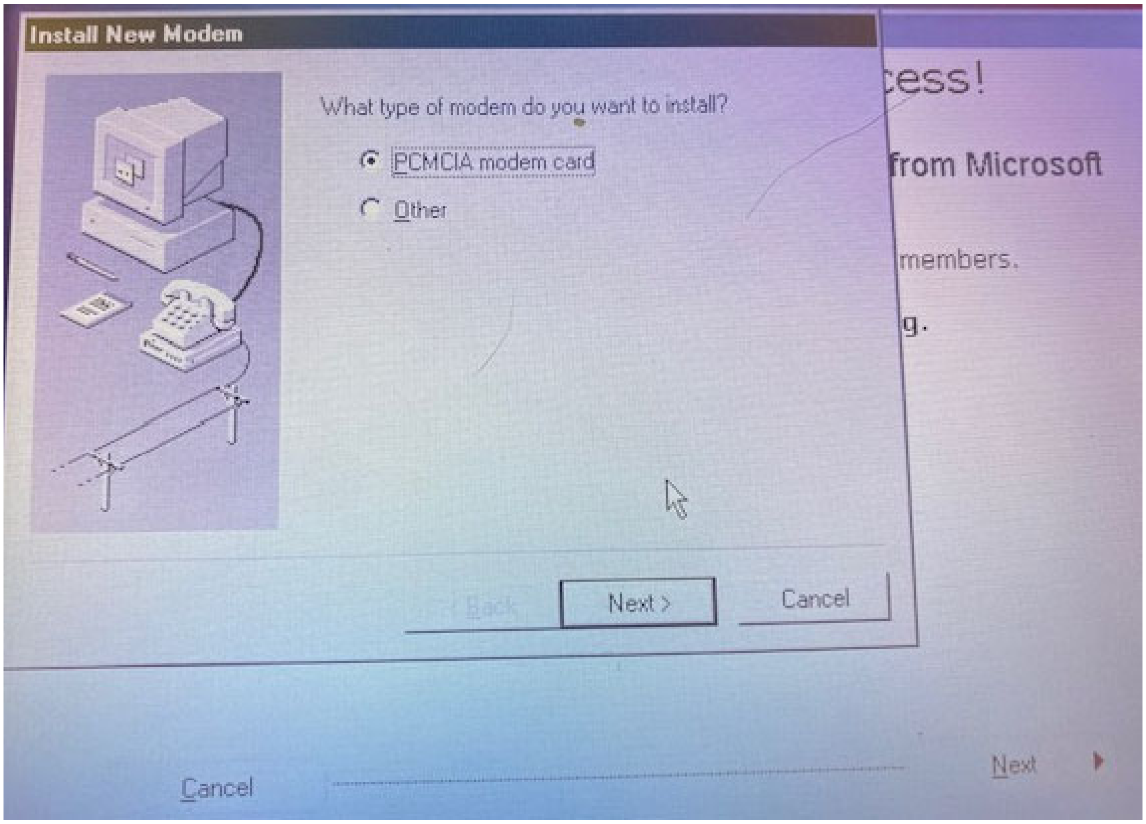
2964. Dr. Johnson points to the book *Using Windows 98* at 683 to 93. I first note that this is chapter 33, titled “Web Subscriptions and the Active Desktop,” which actually begins at page

678. A POSITA would notice the numerous differences between what is described in Windows 98 and the claim limitation. The first difference is that Windows 98 is disclosing updating a web page, which may or may not have images. The second, and more important issue, is the claim limitation requires an automatic connection with ***said first remote server system***.

2965. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. Screenshots are provided here:




STYLISTIC
msn
Welcome to MSN Internet Access!
Get fast, reliable Internet Access and e-mail from Microsoft
We'll now guide you through the setup process.
Note: This process is for both new and existing MSN members.
We will need to install a modem before continuing.
Please click Next to continue.
Cancel
Next
Start
11:04 PM
FUJITSU


Install New Modem
What type of modem do you want to install?
PCMCIA modem card
Other
< Back
Next >
Cancel
cess!
from Microsoft
members.
g.
Cancel
Next

2966. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

2967. The Fujitsu Stylistic Tablet has no mechanism to automatically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem. PCMCIA functionality is found in 1-3 of the Stylistic Tablet 1000 Technical Reference Guide. Programmable System Functions are found at 4-1. The Fujitsu Tablet does support Infra Red, however that only works with direct line of site.

2968. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. Even if one were to use the Stylistic 1000 RF, the maximum connection speed was 1.6 megabits per second. This is inadequate for the items Dr. Johnson proposes using it for such as subscribing to web pages.

2969. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites the Using Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[254]

2970. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

[254] Using Windows 98 Platinum Edition, page 968.

v. Claim [1.m] an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system;

2971. For this element, Dr. Johnson refers back to his discussion of Claim 2 of the '573 Patent. Johnson ¶1839. Dr. Johnson asserts that the Stylistic Tablet running Windows 98 fulfills this requirement. Dr. Johnson simply refers to portions of the book, *Using Windows 98*, that refer to authentication of websites generally. Johnson ¶1754. The portions of *Using Windows 98* states:

- Authentication. When you connect to a website, how do you know who's really running that server? When you download and run a program, how do you know that it hasn't been tampered with or infected with a virus? When extremely sensitive information is involved, you may want to insist on secure connections guaranteed by digital certificates.

- Encryption. Certain types of data-usernames and passwords, credit card numbers, and confidential banking information, for example-are too sensitive to be sent "in the clear," where they can be read by anyone who can intercept the packets. For these transactions, only secure, encrypted connections are acceptable.

- Control over executable content. The Internet is filled with programs and add-ins that can expand the capabilities of your browser. Unfortunately, poorly written or malicious add-ins can carry viruses, corrupt valuable data, and even expose your network to unauthorized break-ins. On most networks, administrators try to limit the potential for damage by restricting the types of files that users can download and run.[255]

2972. Dr. Johnson also emphasizes that *Using Windows 98* states that IE4 "uses digital certificates to verify the publisher of an ActiveX control before determining how to handle it," and that IE4 can use "Secure Sockets Layer (SSL) over HTTP" and "digital certificates that comply with the X.509 standard" when communicating with web servers. Johnson ¶1754 (quoting *Using Windows 98* at 665-66, 670, 743-34).

[255] Using Windows 98, 654.

2973. I note that Dr. Johnson conflates the Internet Explorer browser reviewing a websites digital certificate for websites that offer such a certificate, with receiving authentication information from said server system.

2974. Also, the claimed authentication is related to the previous claim element of "a remote connection function configured to . . . send a request for image data." Again, for that claim step, Dr. Johnson relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages," and the "Active Channel" feature that he alleges "allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster." Johnson ¶¶1745-47. There is no evidence that these subscription features include authentication as part of their processes, nor that these subscription features used ActiveX control or anything else the general description of authentication in Windows 98 is referring to. Moreover, Dr. Johnson makes no attempt to explain how *Using Windows 98*'s general description of supporting authentication is tied to these other subscription features. Therefore, even if the Stylistic Tablet could be combined with Win98, there is no suggestion that these subscription tools that form the basis for most of Dr. Johnson's positions for previous claim elements use or require authentication before receiving subscription content.

2975. Also, I again emphasize here that SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices (e.g., devices other than powerful desktop computers).[256] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there

[256] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[257] Given those challenges still existed in 2004, Dr. Johnson's report is deficient also because he does not attempt to analyze or evaluate in any way how SSL or TLS might behave or perform on smaller device like the Stylistic Tablet.

2976. RFC 2246, which describes X.509 digital certificates, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38.

2977. Dr. Johnson does not address how the subscription services allegedly provided by Windows 98 would use or be modified to use digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. The subscription services Dr. Johnson relies on receive content from websites, but there would be no way to force servers serving such website content to use digital certificates. For at least these reasons, Dr. Johnson's analysis is deficient.

2978. Further, Dr. Johnson ignores that network authentication only applies if one wishes to authenticate to a particular network. Windows 98 will allow the user to login locally and use the full functionality of Windows 98 without authenticating to any network. The Fujitsu Stylistic Tablet is designed to work without any network or remote server. In fact, the only way one could connect to any network or server is to first purchase a separate PCMCIA modem, install that

[257] *Id.*

modem, then dial into a network whenever a connection is desired. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. A review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card.

2979. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

2980. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

vi. Claim [1.n] a software update function configured to obtain an updated version of said onboard software from said server [1.o] and to replace said current version of said onboard software in said memory with said updated version.

2981. For this claim limitation, Dr. Johnson states: "See above (e.g., Section XI.D.1.d.(12))." Johnson ¶1840. That section of Dr. Johnson's report begins on paragraph 1769. Dr. Johnson points to the Windows Update Wizard. As has been discussed previously in this report, the frame is not configured to obtain an update. A user must manually update the operating system. The book *Using Windows 98 Platinum Edition*[258] has a section on updating Windows 98. That section is three pages long (pages 292 to 294) with multiple steps. These steps must be executed by a user:

A. Click Start and click the Windows Update icon. Internet Explorer comes up automatically and attempts to connect to Microsoft Windows Update site shown in figure 16.1.

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[258] Bott, E., & Person, R. (1998). *Using Microsoft Windows 98 with Cdrom*. Que Corp.

B. Click on Update Wizard. A registration wizard pops up if this is the first time you have used the Update Wizard (see figure 16.2). You must fill out the registration to continue. Part of the registration is to upload your configuration files to Microsoft. You can deselect a check box, so this doesn't happen if you want to.

C. The Update Wizard web page contains two options. Update and Restore. Click Update to scan the internet for updated system files. A new Internet Explorer window pops up, as shown in figure 16.3. The update Wizard loads necessary components into your system and then scans the database for updated drivers.

D. As updates are found the wizard refreshes the screen and the list of files available for update. Select a file in the list on the left to see its description as well as its size, and approximate download time on the right side of the main windows.

E. Click on Install to install the file. Only one file can be installed at a time, and your computer may need to be restarted after a file is installed. Let the computer restart if necessary, before downloading a second update in order to verify that it is still working properly.

2982. The section goes on to discuss the various problems that can arise when updating Windows 98. But even if everything goes smoothly, an operating system consists of numerous individual files and applications. Windows 98 required a user to individually download and install these one at a time, with potentially numerous pauses to restart the system.

2983. In fact, Dr. Johnson's report goes through the process with screenshots beginning on page 567 of his report and continuing through page 571. This is not something the device is configured to do. Rather it is a lengthy and manual process the user must do.

2984. I again note that, Dr. Johnson does not conclude this section by even asserting that he believes this claim limitation is rendered obvious, nor by what he might believe it is rendered obvious (i.e., Windows 98 alone, Windows 98 combined with something, etc.).

2985. This is further exacerbated by the fact that a user would need to first add a PCMCIA modem to the Fujitsu Stylistic Tablet, then manually dial in to a network. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. A review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

2986. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

2987. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

vii. Claim [3.] The digital display apparatus of claim 2, wherein said authentication function is further configured to provide device authentication information to said first remote server system prior to obtaining image data from said first remote server system.

2988. Dr. Johnson asserts that the Stylistic Tablet running Windows 98 meets this claim. Johnson ¶1850-51. However, since the authentication function is not disclosed or suggested for at least the same reasons as with respect to claim 1, then claim 3 is also not disclosed or suggested. Dr. Johnson first points to network authentication. But this ignores the fact that network authentication only applies if one wishes to authenticate to a particular network. Windows 98 will allow the user to login locally and use the full functionality of Windows 98 without authenticating to any network. It should also be pointed out that the Stylistic Tablet did not come with Windows

98, rather it came with Windows 95. At no point does Dr. Johnson assert that the Stylistic 1000 Tablet running Windows 95 anticipates or renders obvious the asserted claims of the Patents-in-Suit.

2989. Using the Stylistic Tablet with Windows 98, I found that it starts up without requiring any login at all, whether locally or on a network.

2990. Dr. Johnson then points to logging into websites that require a username and password. However, that is not device authentication. That is user authentication. The user could go to any device and use any browser to log into the same web page.

2991. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

viii. Claim [4.] The digital display apparatus of claim 1, wherein said onboard software further comprises an initialization function configured to prompt said first remote server system to associate a record with said digital display apparatus.

2992. Here, Dr. Johnson simply cites portions of *Using Windows 98* that discuss that a login or personal certificate may be required when using the subscription tool to subscribe to password-protected websites. Johnson ¶¶1852-53.

2993. However, logging into a website is not the claimed initialization function that prompts a remote server system to associate a record with a digital display apparatus. The evidence relied on by Dr. Johnson assumes a record already exists - that is, the evidence describes a login process, not an initialization associated a record with a device. The ’930 Patent provides that:

> The initialization process begins at step 800 when the frame device is connected to a power Source and a communication medium such as a telephone line or network connection. The frame device may be configured to automatically connect via a wireless connection or the user may manually couple it to a power source and communication medium.
>
> . . .

> At step 805, the data repository is analyzed to d to determine whether there is a record for the frame device initiating the connection. If a record for the frame device is not located, step 807 executes and an image prompting the user to create a picture box account associated with that frame device is displayed to the user.
>
> . . .
>
> Once the picture box is obtained, step 813 executes, at step 813 the behavior characteristics of the frame device is determined. The behavior characteristics may be established by default or customized according to the user's preferences. When the behavior characteristics are determined, step 815 executes. At step 815, the invention contemplates loading the behavior characteristics into the data repository for use by the frame device.

'930 Patent at 23:59-65, 24:9-16, 24:39-46.

2994. Therefore, the initialization function as described, for example, in this portion of the '930 Patent refers to an automatic initialization process carried out by the display apparatus to ensure the user has a record associated with the remote server system. Dr. Johnson provides no evidence that Stylistic Tablet combined with Win98 performs such an operation.

2995. Further, the Fujitsu Stylistic Tablet is designed to operate without a network or server. In fact, should a user wish to connect to a network, the user must first purchase a separate PCMCIA modem, install said modem, then dial up each time a connection is desired.

2996. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

2997. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

2998. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. The Fujitsu Stylistic Tablet has no mechanism to periodically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. Even if one were to use the Stylistic 1000 RF, the maximum connection speed was 1.6 megabits per second. This is inadequate for the items Dr. Johnson proposes using it for such as subscribing to web pages.

2999. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites a Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[259]

3000. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

ix. Claim [7] The digital display apparatus of claim 1, wherein said memory comprises a connection timing parameter that indicates a timing interval for said digital display apparatus to automatically initiate periodic connections with said first remote server system.

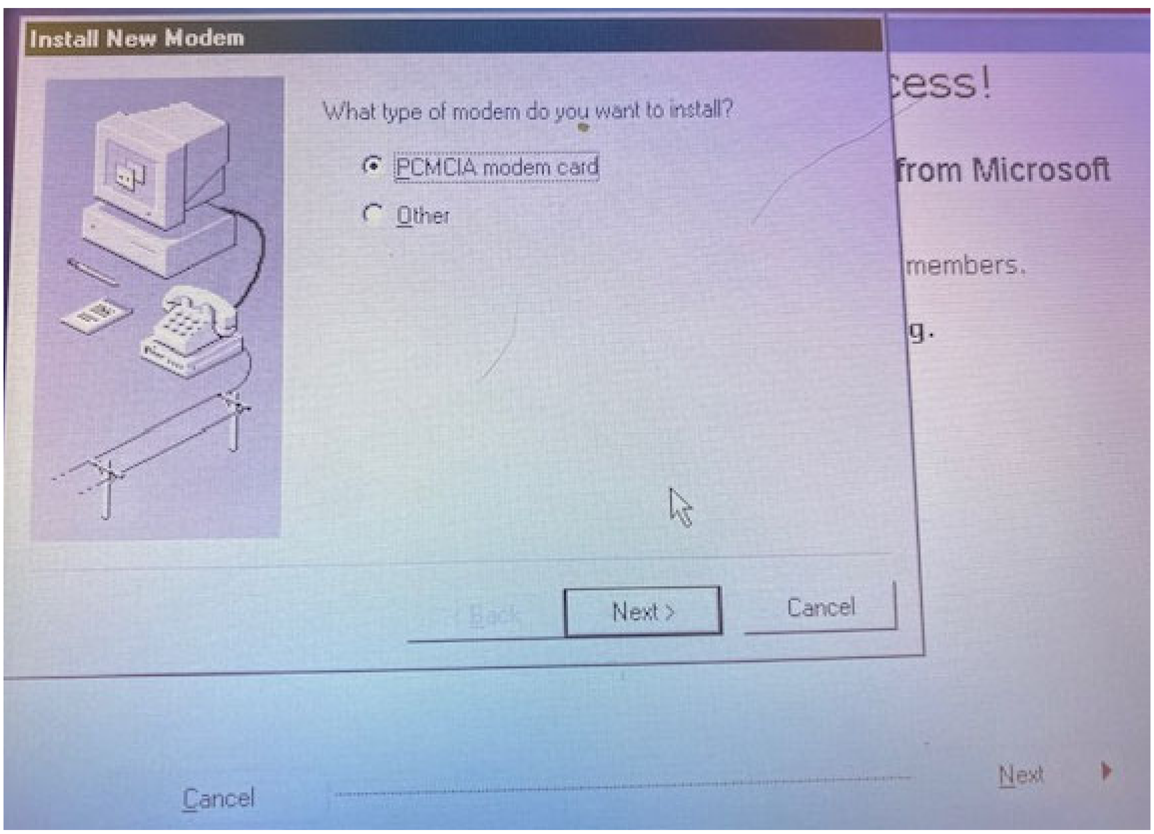
3001. For this claim, Dr. Johnson again relies on the subscription services of Win98/IE4. Johnson ¶1858. As I have described, this does not occur due to a frame device automatically issuing a request. Quite the contrary, the user must take specific steps to subscribe. In fact, Dr. Johnson cites the *Using Windows 98* book: "The dialog box allows a user to 'create a custom

[259] Using Windows 98 Platinum Edition, page 968.

schedule, using a dizzying variety of options." Johnson ¶1719 (quoting *Using Windows 98* at 689-90).

3002. Also, the Fujitsu Stylistic Tablet is designed to operate without a network or server. In fact, should a user wish to connect to a network, the user must first purchase a separate PCMCIA modem, install said modem, then dial up each time a connection is desired.

3003. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.



3004. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

3005. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. The Fujitsu Stylistic Tablet has no mechanism to periodically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. Even if one were to use the Stylistic 1000 RF, the maximum connection speed was 1.6 megabits per second. This is inadequate for the items Dr. Johnson proposes using it for such as subscribing to web pages.

3006. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites a Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[260]

3007. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

[260] Using Windows 98 Platinum Edition, page 968.

x. Claim [8.] The digital display apparatus of claim 1, wherein said memory comprises an image display parameter comprising a timing interval for periodically selecting an image data file from said memory for rendering on said display region.

3008. Claim 8 is not anticipated nor rendered obvious for the same reasons as claim 1. Some of those arguments are repeated here.

3009. The Fujitsu Stylistic Tablet is designed to operate without a network or server. In fact, should a user wish to connect to a network, the user must first purchase a separate PCMCIA modem, install said modem, then dial up each time a connection is desired.

3010. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

3011. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. The Fujitsu Stylistic Tablet has no mechanism to periodically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem. Even if a user where to use the Stylistic 1000 RF, that user would be limited to 1.6 megabits per second.

3012. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites the Using Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was

discussed earlier in this report, this book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[261]

3013. For at least these reasons, the Fujitsu Stylistic Tablet with Windows 98 does not anticipate or render obvious this claim limitations.

3. Claim 2 of the '930 Patent are valid in view of Stylistic Tablet in combination with Win98, alone or further in combination with O'Toole

i. Claim [2.] The digital display apparatus of claim 1, wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system.

3014. First, as I noted with respect to Claim 1, Dr. Johnson has not shown that the Stylistic Tablet has a unique identifier. Dr. Johnson also has thus also not shown that the Stylistic Tablet provides a unique identifier to a first remote server system. Dr. Johnson points to user IDs for this claim limitation stating:

> "For example, as discussed above, the specification of the '930 Patent recognizes that a user ID can be used as a unique identifier for the frame device. See, e.g., '930 Patent at 17:44-48 ("In one or more embodiments of the invention frame device 200 is configured to establish an FTP session with package server 271. Once the session is established, frame device 200 transmits a unique identifier (e.g. user/frameID).").

Johnson ¶1844.

3015. However, Dr. Johnson's citation states "user/frameID." A POSITA would understand that this is not a "frame ID," but rather an identifier of the user and the frame.

[261] Using Windows 98 Platinum Edition, page 968.

3016. Dr. Johnson then points to logging into web page using IE 4. Johnson ¶1844. However, this ignores the fact that this does not identify the digital display, but rather the user. The user can go to any computer, using any browser, and login to the same web page.

3017. Then Dr. Johnson points to Internet Explorer using digital certificates. Johnson ¶1845. Dr. Johnson conflates the Internet Explorer browser reviewing a websites digital certificate for websites that offer such a certificate, with receiving authentication information from said server system.

3018. The Fujitsu Stylistic Tablet is designed to work without any network or remote server. In fact, the only way one could connect to any network or server is to first purchase a separate PCMCIA modem, install that modem, then dial into a network whenever a connection is desired. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. This has been described in detail previously in this report.

3019. Dr. Johnson also points to some evidence that a product ID and product key for the Stylistic Tablet can be stored in the Windows 98 Registry. Johnson ¶1846. However, there is no evidence that such a product ID or product key is ever provided to a server system as part of an authentication function.

3020. Dr. Johnson then turns his attention to O'Toole. Johnson ¶1847. O'Toole states "One of the main challenges in a distributed database is maintaining consistency among the records stored at different locations. In one implementation, updates are performed at the roots of SODA nets. These updates are then propagated to the appliances from the root." O'Toole at 23:46-51.

These updates in O'Toole are done manually. This is shown in the following excerpt from O'Toole: "The updates at the root are performed through a Web based interface so that the administrator of the information Stored at the root can be physically Separated from the root machine itself." O'Toole at 23:61-65. O'Toole also describes using "a unique identification number or serial number or MAC address that distinguishes the appliance from other appliances, and whatever the appliance has observed from the local networking environment." O'Toole at 11:66-12:5.

3021. Dr. Johnson then states: "A POSITA would have been motivated to incorporate the teachings of O'Toole with the combination of Stylistic Tablet and Win98." Johnson ¶1849. As has been pointed out, the Stylistic Tablet did not come with Windows 98. Furthermore, O'Toole is directed towards network appliances that might not even have a monitor or keyboard "A typical networking appliance product, which might or might not have a keyboard or monitor and which might not yet have been configured except for Some factory Standard material incorporated into it, must boot when installed into a local area network, and then a person near that appliance can configure the appliance by filling out forms or typing in parameters into Screens or into a terminal." O'Toole at 1:22-28. A POSITA would have no reason to combine O'Toole with either the Stylistic Tablet or Windows 98.

3022. This combination ignores the fact that, according to Dr. Johnson's own arguments, Windows 98 is already capable of being updated, without O'Toole. Dr. Johnson does not discuss what advantage would be obtained. Furthermore, O'Toole is quite clear that to implement O'Toole requires the SODA protocols, O'Toole at 6:27-29, as well as at least one SODA appliance. O'Toole at 4:41-46, 4:66-67, 5:2-5, 5:11-15. O'Toole also describes the SODA process as being intensive stating "If a single SODA appliance 18 cannot carry a client load any more, the client

customer may install another SODA appliance." O'Toole at 4:53-55. O'Toole also explicitly states that "SODA appliances 18 are inexpensive ***special-purpose devices*** that serve video and other content…" O'Toole at 5:48-50 (emphasis added).

3023. Dr. Johnson provides no insight into how he believes the SODA protocols or SODA appliances will be integrated with the Stylistic Tablet running Windows 98. But doing so would require integrating new protocols and new devices into an existing network. This would not be using known methods to yield predictable results. Quite the contrary, this would be implementing new techniques, protocols, and devices, with no guarantee of success.

3024. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 and O'Toole does not anticipate or render obvious this claim limitation.

4. Claims 5, 6, and 15 of the '930 Patent are valid in view of Stylistic Tablet in combination with Win98 and Hoyle

3025. I note that, since Claim 15 is dependent from Claim 11, Claim 15 includes all the elements of Claim 11.

3026. As has been discussed, the Stylistic Tablet did not come with Windows 98, and Dr. Johnson's combination is entirely speculative.

i. Claim [5.] The digital display apparatus of claim 1, wherein said digital display apparatus is configured to display an account initialization message.

3027. Dr. Johnson states:

> To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious that the digital display apparatus is configured to display an account initialization message. For example, Hoyle discloses that a targeted advertisement display system may be configured to display a message asking if a new user would like to set up a new account. *See, e.g.*, Hoyle at 26:49-27:13 ("As shown in FIG. 9, upon execution of the client software application 10, a login and password input box is displayed. This is shown at block 148. Once the user has entered a login name, a check is made at block 150 to determine whether the user name is new. . . . If, back at block 150, the login name is determined to be new, the user can be queried as to whether they would like to set up a new account, as

> indicated at block 158. . . . If a new account is desired, flow moves to block 160 where the application requests various demographic data, which can be the same data requested of the user who originally downloaded the application from server 22.").

Johnson ¶1854.

3028. Dr. Johnson thus acknowledges that Stylistic Tablet running Win98 does not disclose this claim limitation. I agree with Dr. Johnson on this point. Dr. Johnson goes on to discuss a login and password screen displayed in Hoyle, asserting that this login screen discloses this claim limitation. However, a POSITA would readily understand that a login screen is not directed to initializing an account or displaying an account initialization message, but rather requires an existing account in order to function. Even if one were to argue that Hoyle provides one the opportunity to setup a new account from this login screen, Dr. Johnson has not adequately explained ***why*** one would combine Hoyle with the alleged combination of Stylistic Tablet and Win98.

3029. Dr. Johnson attempts to provide some rationale that Win98's description of subscribing to password-protected websites lends itself to also allowing users to create accounts and thus display account initialization messages. Johnson ¶1856. But this brief statement from Dr. Johnson does not actually address why a POSITA would want to make such a combination or how a POSITA would accomplish this. The subscription feature in Win98 appears to allow for a password to be automatically used by IE4 in order to log in and receive content from the website, but Win98 is clear that an existing account is needed, and that, if the credentials provided for the existing account are incorrect, Using Windows 98 advises users to separately and manually go and ensure they have an account and the proper credentials.[262] In fact, the login information window

[262] Using Windows 98, 691-92.

shown on page 682 of Using Windows 98 is simply for the user to provide credentials to the subscription service to use when attempting to retrieve website content from password-protected websites, and thus would not have the functionality to allow users to create an account with a third-party website. This would require some kind of back end method to set up new accounts across a vast array of different websites using the subscription service application, which would be neither simple nor predictable. Dr. Johnson also does not address how such a combination would have improved Windows 98, the Stylistic Tablet, or Hoyle.

3030. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 and Hoyle does not anticipate or render obvious this claim limitation.

ii. Claim [6.] The digital display apparatus of claim 5, wherein said account initialization message prompts a user to create an account with said first remote server system.

3031. Claim 6 is not anticipated nor rendered obvious for the same reasons as Claim 5. Dr. Johnson points to the Stylistic Tablet running Windows 98 in view of Hoyle.

3032. Dr. Johnson states: "A POSITA would have found it obvious to provide in Win98 a new account initialization message like that of Hoyle when a user subscribes to a new password-protected website in order, for example, to prompt the user to create a new account." Johnson ¶1857.

3033. In addition to the issues I addressed with respect to Claim 5 above, this assertion ignores the nature of websites one can log into. Browsers, including IE 4 with Windows 98 allow one to navigate to a website, and then the web server takes over. One could not combine Hoyle with Windows 98; one would have to combine Hoyle with the web server. Put another way, the web browser cannot dictate to the web server how accounts are setup. Dr. Johnson's combination, even if attempted, simply would not work.

3034. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 and Hoyle does not anticipate or render obvious this claim limitation.

3035. I note that, for Claim 15, Dr. Johnson merely refers back to his previous sections on Claims 1 and 5 of the '930 Patent. Johnson ¶¶1866-82, 1888.

iii. Claim [11.d] security information comprising authentication information for a first remote server system

3036. Dr. Johnson asserts that the Stylistic Tablet running Windows 98 fulfills this requirement. However, Dr. Johnson simply refers to portions of *Using Windows 98* that refer to authentication of websites generally. Johnson ¶¶1818-19. The portions of *Using Windows 98* state:

- Authentication. When you connect to a website, how do you know who's really running that server? When you download and run a program, how do you know that it hasn't been tampered with or infected with a virus? When extremely sensitive information is involved, you may want to insist on secure connections guaranteed by digital certificates.

- Encryption. Certain types of data-usernames and passwords, credit card numbers, and confidential banking information, for example-are too sensitive to be sent "in the clear," where they can be read by anyone who can intercept the packets. For these transactions, only secure, encrypted connections are acceptable.

- Control over executable content. The Internet is filled with programs and add-ins that can expand the capabilities of your browser. Unfortunately, poorly written or malicious add-ins can carry viruses, corrupt valuable data, and even expose your network to unauthorized break-ins. On most networks, administrators try to limit the potential for damage by restricting the types of files that users can download and run.[263]

3037. Dr. Johnson also emphasizes that *Using Windows 98* states that IE4 "uses digital certificates to verify the publisher of an ActiveX control before determining how to handle it," and that IE4 can use "Secure Sockets Layer (SSL) over HTTP" and "digital certificates that comply

[263] Using Windows 98, 654.

with the X.509 standard" when communicating with web servers. Johnson ¶1818-19 (quoting *Using Windows 98* at 665-66, 670, 743-34).

3038. I note that Dr. Johnson conflates the Internet Explorer browser reviewing a websites digital certificate for websites that offer such a certificate, with receiving authentication information from said server system.

3039. Also, the authentication information is related to the later claim step of "an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system," and thus to the remote connection function claim element that includes sending a request for image data. For that later claim step, Dr. Johnson refers back to his discussion of claim 2 of the '573 Patent, where he relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages," and the "Active Channel" feature that he alleges "allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster." Johnson ¶1745-47. There is no evidence that these subscription features include authentication as part of their processes, nor that these subscription features used ActiveX control or anything else the general description of authentication in Windows 98 is referring to. Moreover, Dr. Johnson makes no attempt to explain how *Using Windows 98*'s general description of supporting authentication is tied to these other subscription features. Therefore, even if the Stylistic Tablet could be combined with Win98, there is no suggestion that these subscription tools that form the basis for most of Dr. Johnson's positions for previous claim elements use or require authentication before receiving subscription content.

3040. Also, I again emphasize here that SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not

obvious for resource-constrained devices (e.g., devices other than powerful desktop computers).[264] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[265] Given those challenges still existed in 2004, Dr. Johnson's report is deficient also because he does not attempt to analyze or evaluate in any way how SSL or TLS might behave or perform on smaller device like the Stylistic Tablet.

3041. RFC 2246, which describes X.509 digital certificates, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38.

3042. Dr. Johnson does not address how the subscription services allegedly provided by Windows 98 would use or be modified to use digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. The subscription services Dr. Johnson relies on receive content from websites, but there would be no way to force servers serving such website content to use digital certificates. For at least these reasons, Dr. Johnson's analysis is deficient.

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[264] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[265] *Id.*

3043. Further, Dr. Johnson ignores that network authentication only applies if one wishes to authenticate to a particular network. Windows 98 will allow the user to login locally and use the full functionality of Windows 98 without authenticating to any network.

3044. Dr. Johnson's reference to Internet Explorer using digital certificates. Dr. Johnson conflates the Internet Explorer browser reviewing a websites digital certificate for websites that offer such a certificate, with receiving authentication information from said server system.

3045. The Fujitsu Stylistic Tablet is designed to work without any network or remote server. In fact, the only way one could connect to any network or server is to first purchase a separate PCMCIA modem, install that modem, then dial into a network whenever a connection is desired. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. A review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

3046. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

3047. The Fujitsu Stylistic Tablet has no mechanism to periodically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem.

3048. Furthermore, the Fujitsu Stylistic Tablet running Windows 98 does not require one to authenticate even locally. The system boots directly into Windows 98 without any authentication required.

3049. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

iv. Claim [11.e] and a unique identifier for said digital display apparatus,

3050. For this claim limitation Dr. Johnson points to the user ID in Windows 98. Johnson ¶1820. However, as has been discussed elsewhere in this report, the user ID uniquely identifies a user, not the device. In fact, the same user can logon to the network from other devices, using the user ID. And in fact, several different users can logon to the same device each using a different user ID.

3051. Dr. Johnson then turns his attention to digital certificates stating "IE4 can use a personal certificate stored in memory of the computer to access secured web pages automatically." Johnson ¶1821. Again Dr. Johnson is overlooking the fact that this is a personal certificate, it identifies the person, not the device.

3052. Dr. Johnson then states: "Furthermore, upon setting up Win98, the user is asked to "enter a name and description for [the user's] computer." Getting Started Microsoft Windows 98 at 32. "If [the user's] computer is connected to a network, this information identifies [the user's] computer to other users." Johnson ¶1824.

3053. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 and Hoyle does not anticipate or render obvious this claim limitation.

v. Claim [11.f] and onboard software;

3054. As I have described, there are various issues with running Windows 98 on the Stylistic Tablet. For those reasons, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim.

vi. Claim [11.j] based on a value of said image display parameter; and

3055. Regarding the Stylistic Tablet running Windows 98, Dr. Johnson does not even provide a complete argument. Dr. Johnson devotes a single paragraph to this issue, stating:

> "Stylistic Tablet running Win98 discloses rendering based on a value of an image display parameter. For example, Win98 discloses that a user "can configure Windows 98 to use a screen saver provided by a subscribed Active Channel Website." Windows 98 Resource Kit at 278. "Windows 98 rotates between subscribed channel screen savers, displaying each for 30 seconds by default." Id. Thus, a POSITA would have understood that Stylistic Tablet running Win98 includes an image display parameter comprising a 30-second timing interval."

Johnson ¶1875.

3056. As pointed out earlier in this report, Dr. Johnson is overlooking the complete claim limitation which is "an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region based on a value of said image display parameter." It is not merely that there exists some display parameter, but that the "image display function is configured to obtain image data…based on a value of said image display parameter."

3057. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

vii. Claim [11.k] a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, [11.l] said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications [11.m] and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files

3058. For these elements, Dr. Johnson refers back to his discussion of Claim 2 of the '573 Patent. Johnson ¶1835-38. Dr. Johnson again relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages,"

and the "Active Channel" feature that he alleges "allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster." Johnson ¶1745-47. This is not image data or preferences. Furthermore, this does not occur due to a frame device automatically issuing a request. Quite the contrary, the user must take specific steps to subscribe. In fact, Dr. Johnson cites the *Using Windows 98* book: "The dialog box allows a user to 'create a custom schedule, using a dizzying variety of options.'" Johnson ¶1719 (quoting *Using Windows 98* at 689-90).

3059. Dr. Johnson points to the book *Using Windows 98* at 683 to 93. I first note that this is chapter 33, titled "Web Subscriptions and the Active Desktop," which actually begins at page 678. A POSITA would notice the numerous differences between what is described in Windows 98 and the claim limitation. The first difference is that Windows 98 is disclosing updating a web page, which may or may not have images. The second, and more important issue, is the claim limitation requires an automatic connection with ***said first remote server system***.

3060. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. A review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

3061. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

3062. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet.

3063. The Fujitsu Stylistic Tablet has no mechanism to automatically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem. PCMCIA functionality is found in 1-3 of the Stylistic Tablet 1000 Technical Reference Guide. Programmable System Functions are found at 4-1. The Fujitsu Tablet does support Infra-Red, however that only works with direct line of site.

3064. If a POSITA were to use the Stylistic 1000 RF, then that would limit the user to 1.6 megabits per second. And it must be noted that neither the stylistic 1000 nor the 1000 RF came with Windows 98.

3065. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites the Using Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[266]

3066. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

viii. Claim [11.n] an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system;

3067. For this element, Dr. Johnson refers back to his discussion of Claim 2 of the '573 Patent. Johnson ¶1839. Dr. Johnson asserts that the Stylistic Tablet running Windows 98 fulfills this requirement. Dr. Johnson simply refers to portions of *Using Windows 98* that refer to authentication of websites generally. Johnson ¶1754. The portions of *Using Windows 98* state:

[266] Using Windows 98 Platinum Edition, page 968.

- Authentication. When you connect to a website, how do you know who's really running that server? When you download and run a program, how do you know that it hasn't been tampered with or infected with a virus? When extremely sensitive information is involved, you may want to insist on secure connections guaranteed by digital certificates.

- Encryption. Certain types of data-usernames and passwords, credit card numbers, and confidential banking information, for example-are too sensitive to be sent "in the clear," where they can be read by anyone who can intercept the packets. For these transactions, only secure, encrypted connections are acceptable.

- Control over executable content. The Internet is filled with programs and add-ins that can expand the capabilities of your browser. Unfortunately, poorly written or malicious add-ins can carry viruses, corrupt valuable data, and even expose your network to unauthorized break-ins. On most networks, administrators try to limit the potential for damage by restricting the types of files that users can download and run.[267]

3068. Dr. Johnson refers to page 919 of *Using Windows 98* Platinum Edition. Dr. Johnson is ignoring that this section is describing those networks wherein one has set them up with a centralized server, i.e., server based networks. Essentially all this section is stating is that if one wants to setup a network wherein a centralized server manages then network, then you would need to authenticate to that server. Not only does Windows 98 not even suggest any authentication for web subscriptions, a POSITA would realize that such authentication is not possible for the subscription process described in Windows 98. Page 683 of *Using Windows 98* Platinum Edition states "If you can load a web page into the browser window, you can subscribe to it." Not only does this not envision any authentication, it would be impossible to require every website that one can load into a browser to support authentication, and to have an account for the device.

3069. Dr. Johnson also emphasizes that *Using Windows 98* states that IE4 "uses digital certificates to verify the publisher of an ActiveX control before determining how to handle it," and

[267] Using Windows 98, 654.

that IE4 can use "Secure Sockets Layer (SSL) over HTTP" and "digital certificates that comply with the X.509 standard" when communicating with web servers. Johnson ¶1754 (quoting *Using Windows 98* at 665-66, 670, 743-34).

3070. I note that Dr. Johnson conflates the Internet Explorer browser reviewing a websites digital certificate for websites that offer such a certificate, with receiving authentication information from said server system.

3071. Also, the claimed authentication is related to the previous claim element of "a remote connection function configured to . . . send a request for image data." Again, for that claim step, Dr. Johnson relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages," and the "Active Channel" feature that he alleges "allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster." Johnson ¶1745-47. There is no evidence that these subscription features include authentication as part of their processes, nor that these subscription features used ActiveX control or anything else the general description of authentication in Windows 98 is referring to. Moreover, Dr. Johnson makes no attempt to explain how *Using Windows 98*'s general description of supporting authentication is tied to these other subscription features. Therefore, even if the Stylistic Tablet could be combined with Win98, there is no suggestion that these subscription tools that form the basis for most of Dr. Johnson's positions for previous claim elements use or require authentication before receiving subscription content.

3072. Also, I again emphasize here that SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not

obvious for resource-constrained devices (e.g., devices other than powerful desktop computers).[268] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[269] Given those challenges still existed in 2004, Dr. Johnson's report is deficient also because he does not attempt to analyze or evaluate in any way how SSL or TLS might behave or perform on smaller device like the Stylistic Tablet.

3073. RFC 2246, which describes X.509 digital certificates, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38.

3074. Dr. Johnson does not address how the subscription services allegedly provided by Windows 98 would use or be modified to use digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. The subscription services Dr. Johnson relies on receive content from websites, but there would be no way to force servers serving such website content to use digital certificates. For at least these reasons, Dr. Johnson's analysis is deficient.

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[268] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[269] *Id.*

3075. Further, Dr. Johnson ignores that network authentication only applies if one wishes to authenticate to a particular network. Windows 98 will allow the user to login locally and use the full functionality of Windows 98 without authenticating to any network. The Fujitsu Stylistic Tablet is designed to work without any network or remote server. In fact, the only way one could connect to any network or server is to first purchase a separate PCMCIA modem, install that modem, then dial into a network whenever a connection is desired. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. A review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card.

3076. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

3077. Furthermore, a POSITA would note that nothing in what Dr. Johnson cites involves images. Storing images is integral to this claim limitation. At most, what Dr. Johnson has demonstrated is that if you have a computer running Windows 98 on a network configured to use a centralized server, then you will need to authenticate to that server and/or that if one is using IE to visit a website that has been configured to use digital certificates, then those certificates will be used. None of this discloses nor renders obvious this claim limitation.

3078. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

ix. Claim [11.o] a software update function configured to obtain an updated version of said onboard software from said server and [11.p] to replace said current version of said onboard software in said memory with said updated version

3079. For this claim limitation, Dr. Johnson states: "See above (e.g., Section XI.D.1.d.(12))." Johnson ¶1840. That section of Dr. Johnson's report begins on paragraph 1769. Dr. Johnson relies on the disclosure of the Windows Update Wizard features in Win98. As has been discussed previously in this report, the Stylistic Tablet, even if it were to run Win98, would not be configured with a software update function to obtain an update. A user must manually update the operating system. The book *Using Windows 98 Platinum Edition*[270] has a section on updating Windows 98. That section is three pages long (pages 292 to 294) with multiple steps. These steps must be executed by a user:

A. Click Start and click the Windows Update icon. Internet Explorer comes up automatically and attempts to connect to Microsoft Windows Update site shown in figure 16.1.

B. Click on Update Wizard. A registration wizard pops up if this is the first time you have used the Update Wizard (see figure 16.2). You must fill out the registration to continue. Part of the registration is to upload your configuration files to Microsoft. You can deselect a check box, so this doesn't happen if you want to.

C. The Update Wizard web page contains two options. Update and Restore. Click Update to scan the internet for updated system files. A new Internet Explorer window pops up, as shown in figure 16.3. The update Wizard loads necessary components into your system and then scans the database for updated drivers.

[270] Bott, E., & Person, R. (1998). *Using Microsoft Windows 98 with Cdrom*. Que Corp.

D. As updates are found the wizard refreshes the screen and the list of files available for update. Select a file in the list on the left to see its description as well as its size, and approximate download time on the right side of the main windows.

E. Click on Install to install the file. Only one file can be installed at a time, and your computer may need to be restarted after a file is installed. Let the computer restart if necessary, before downloading a second update in order to verify that it is still working properly.

3080. The section goes on to discuss the various problems that can arise when updating Windows 98. But even if everything goes smoothly, an operating system consists of numerous individual files and applications. Windows 98 required a user to individually download and install these one at a time, with potentially numerous pauses to restart the system.

3081. In fact, Dr. Johnson's report goes through the process with screenshots beginning on page 567 of his report and continuing through page 571. This is not something the device is configured to do. Rather it is a lengthy and manual process the user must do.

3082. I note that again, Dr. Johnson does not conclude this section by even asserting that he believes this claim limitation is rendered obvious, nor by what he might believe it is rendered obvious (i.e., Windows 98 alone, Windows 98 combined with something, etc.).

3083. This is further exacerbated by the fact that a user would need to first add a PCMCIA modem to the Fujitsu Stylistic Tablet, then manually dial in to a network. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. A review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

3084. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

3085. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet.

3086. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

x. Claim [15.] The digital display apparatus of claim 11 wherein said digital display apparatus is configured to display an account initialization message served from said server system.

3087. Dr. Johnson refers back to his discussion of Claim 5 of the ’930 Patent, Johnson ¶1888, where Dr. Johnson states:

> To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious that the digital display apparatus is configured to display an account initialization message. For example, Hoyle discloses that a targeted advertisement display system may be configured to display a message asking if a new user would like to set up a new account. *See, e.g.*, Hoyle at 26:49-27:13 (“As shown in FIG. 9, upon execution of the client software application 10, a login and password input box is displayed. This is shown at block 148. Once the user has entered a login name, a check is made at block 150 to determine whether the user name is new. . . . If, back at block 150, the login name is determined to be new, the user can be queried as to whether they would like to set up a new account, as indicated at block 158. . . . If a new account is desired, flow moves to block 160 where the application requests various demographic data, which can be the same data requested of the user who originally downloaded the application from server 22.”).

Johnson ¶1854.

3088. Dr. Johnson thus acknowledges that Stylistic Tablet running Win98 does not disclose this claim limitation. I agree with Dr. Johnson on this point. Dr. Johnson goes on to discuss a login and password screen displayed in Hoyle, asserting that this login screen discloses this claim limitation. However, a POSITA would readily understand that a login screen is not

initializing an account or displaying an account initialization message, but rather requires an existing account in order to function. Even if one were to argue that Hoyle provides one the opportunity to setup a new account from this login screen, Dr. Johnson has not adequately explained ***why*** one would combine Hoyle with the alleged combination of Stylistic Tablet and Win98.

3089. Dr. Johnson attempts to provide some rationale that Win98's description of subscribing to password-protected websites lends itself to also allowing users to create accounts and thus display account initialization messages. Johnson ¶1856. But this brief statement from Dr. Johnson does not actually address why a POSITA would want to make such a combination or how a POSITA would accomplish this. The subscription feature in Win98 appears to allow for a password to be automatically used by IE4 in order to log in and receive content from the website, but Win98 is clear that an existing account is needed, and that, if the credentials provided for the existing account are incorrect, Using Windows 98 advises users to separately and manually go and ensure they have an account and the proper credentials.[271] In fact, the login information window shown on page 682 of Using Windows 98 is simply for the user to provide credentials to the subscription service to use when attempting to retrieve website content from password-protected websites, and thus would not have the functionality to allow users to create an account with a third-party website. This would require some kind of back end method to set up new accounts across a vast array of different websites using the subscription service application, which would be neither simple nor predictable. Dr. Johnson also does not address how such a combination would have improved Windows 98, the Stylistic Tablet, or Hoyle.

[271] Using Windows 98, 691-692.

3090. Dr. Johnson's assertions ignore the nature of websites one can log into. Consider a bank website. Browsers, including IE 4 with Windows 98 allow one to navigate to a website, and then the web server takes over. One could not combine Hoyle with Windows 98; one would have to combine Hoyle with the web server. Put another way, the web browser cannot dictate to the web server how accounts are setup. Dr. Johnson's combination, even if attempted, simply would not work.

3091. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 and Hoyle does not anticipate or render obvious this claim limitation.

5. Claims 1, 2, and 5-8 of the '656 Patent are valid in view of Stylistic Tablet in combination with Win98, and one of Criss, Kottapurath, or Kikinis

3092. As has been pointed out earlier in this report, Criss can only communicate due to an extensive infrastructure, requiring the base stations disclosed in Criss to operate. To combine this with any other prior art would require extensive experimentation with no guarantee of success.

3093. Also as has been discussed previously in this report, a POSITA would recognize that there is no motivation to combine Kottapurath or Kikinis with any of the other asserted prior art. The Stylistic Tablet and Win98 would not be improved by any combination with Criss, Kottapurath, Kikinis, or any other combination of asserted prior art.

3094. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

i. Claim [1.pre] A display device for displaying image data received from a server system comprising:

3095. Dr. Johnson first merely describes the various physical components of the Stylistic Tablet, such as the type of screen it had, the "Proxim RangeLAN2" radio, and RS-232C Serial

ports. Johnson ¶1895-98. RS-232C serial ports were for, as the name suggests, serial cable communications. This involves two computers in close proximity with a serial cable between them.

3096. Dr. Johnson then states that Win98 allowed users to view web pages in a browser. Johnson ¶1899. As has been discussed previously, web pages are not image data. They are HTML documents that may or may not also include images. Dr. Johnson appears to be alleging again here that this means the Stylistic Tablet running Win98 could obtain images for display from a server system. Johnson ¶1702. Web pages are served from various web servers hosted by various entities and, while web pages can include images as part of the web page, this would not be understood to be a the same as that described in the Patents-in-Suit. For example, the server image repository in the Patents-in-Suit is described as "a centralized repository" that is "populated with image data via the image collection process," *see, e.g.*, '573 Patent at Abstract, and "stores information used to control the content distributed to and from each frame" such as data about each user and the preferences associated with that user." *See, e.g.*, '573 Patent at 19:6-15. Web servers serving web pages would not include these features described in the Patents-in-Suit.

3097. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

ii. Claim [1(e)] said computer readable instructions for controlling the operation of said display device comprising instructions for causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system, said communications session comprising the steps of:

3098. Dr. Johnson states: "To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious for the computer readable instructions to cause said display device, upon connection to a power source and a communications source and prior to receiving

any input from a user, to automatically initiate a communications session with said server system." Johnson ¶1905.

3099. This appears to be a tacit admission that the Stylistic Tablet running Windows 98 does not disclose this claim limitation. On that point, I agree with Dr. Johnson.

3100. Apparently recognizing that Stylistic Tablet running Win98 is deficient, Dr. Johnson attempts to combine, in the alternative, each of Criss, Kottapurath, and Kikinis with the Stylistic Tablet running Win98.

3101. Dr. Johnson first discusses Criss. First, as has been discussed previously in this report, Criss is in an entirely different field. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. This is in an entirely different field than the Stylistic Tablet and Win98, which are a personal computing device and an operating system, respectively. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). And again, a review of undergraduate courses in computer science at Rice University,[272] where Dr. Johnson is a professor, reveals not a single course in telecommunications. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Criss. A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

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272 https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

3102. Dr. Johnson only provides a partial quotation from Criss. Johnson ¶1906 (citing Criss at 7:22-28). The full quote from Criss cited by Dr. Johnson is "When a mobile terminal 36 within the system initially powers up (via an on/off Switch for example) or is reset, the mobile terminal 36 goes through an initialization, or boot-up routine. Such routine includes communicating with the host computer 30 via a selected base station 26 in order that the host computer 30 provides the mobile terminal 36 with its internet protocol (IP) address as is conventional." Criss at 7:22-28. A POSITA would immediately see that Criss is not even describing a computer, like the Stylistic Tablet device, but rather a mobile terminal that in turn needs to communicate with a host computer via a base station.

3103. Base stations are integral to Criss working. This is shown throughout Criss, including in figure 1 shown here:

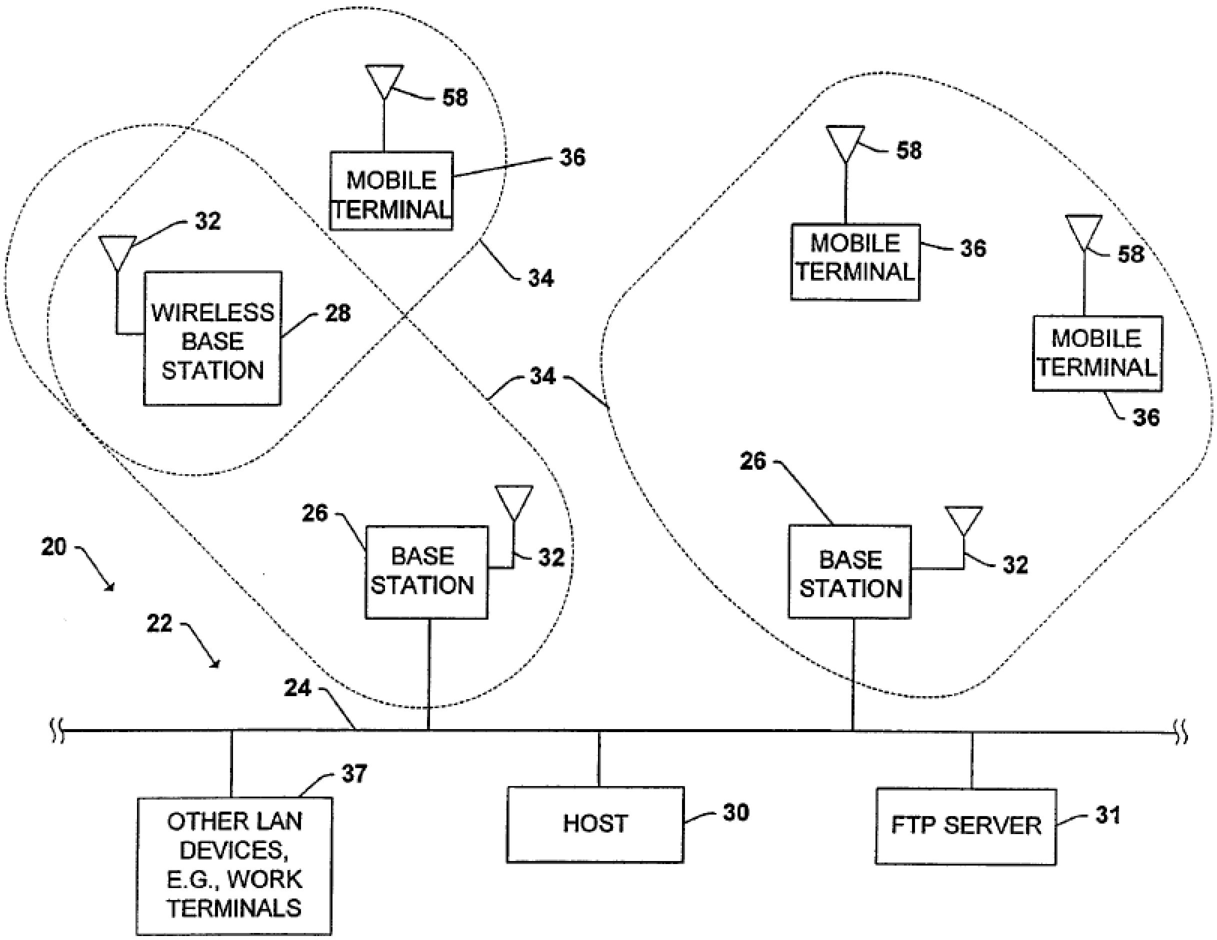


Fig. 1

3104. Criss describes a process in which a mobile device communicates with a host computer 30 that "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on." A host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an

exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

3105. Criss thus discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Stylistic Tablet running Win98, this combination would not reach the claims of the Patents-in-Suit.

3106. Also, Dr. Johnson does not discuss how the extensive infrastructure needed for Criss to work would be fused with the Stylistic Tablet running Windows 98. In fact, Dr. Johnson does not even mention how these base stations, that are required in Criss to communicate, would be incorporated.

3107. Dr. Johnson then turns his attention to Kottapurath, asserting that Kottapurath discloses that a "mechanism for installing and upgrading an operating system or application program" and that the "method begins when the operator of the local computer 12 turns on or reboots or otherwise re-starts the computer." Johnson ¶1907 (quoting Kottapurath at 3:38-40). However, Dr. Johnson ignores the fact that Kottapurath requires an interrogation code segment on the device and an identifier program on the server. It is not even clear that the interrogation code of Kottapurath could run on a Stylistic Tablet running Windows 98. It should be noted that Kottapurath never mentions Windows, but only MS DOS or UNIX. Kottapurath 3:14-20.

3108. As was previously discussed in this report, Kottapurath has extensive requirements that would have required substantial work and undue experimentation to combine with the other prior art citations. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

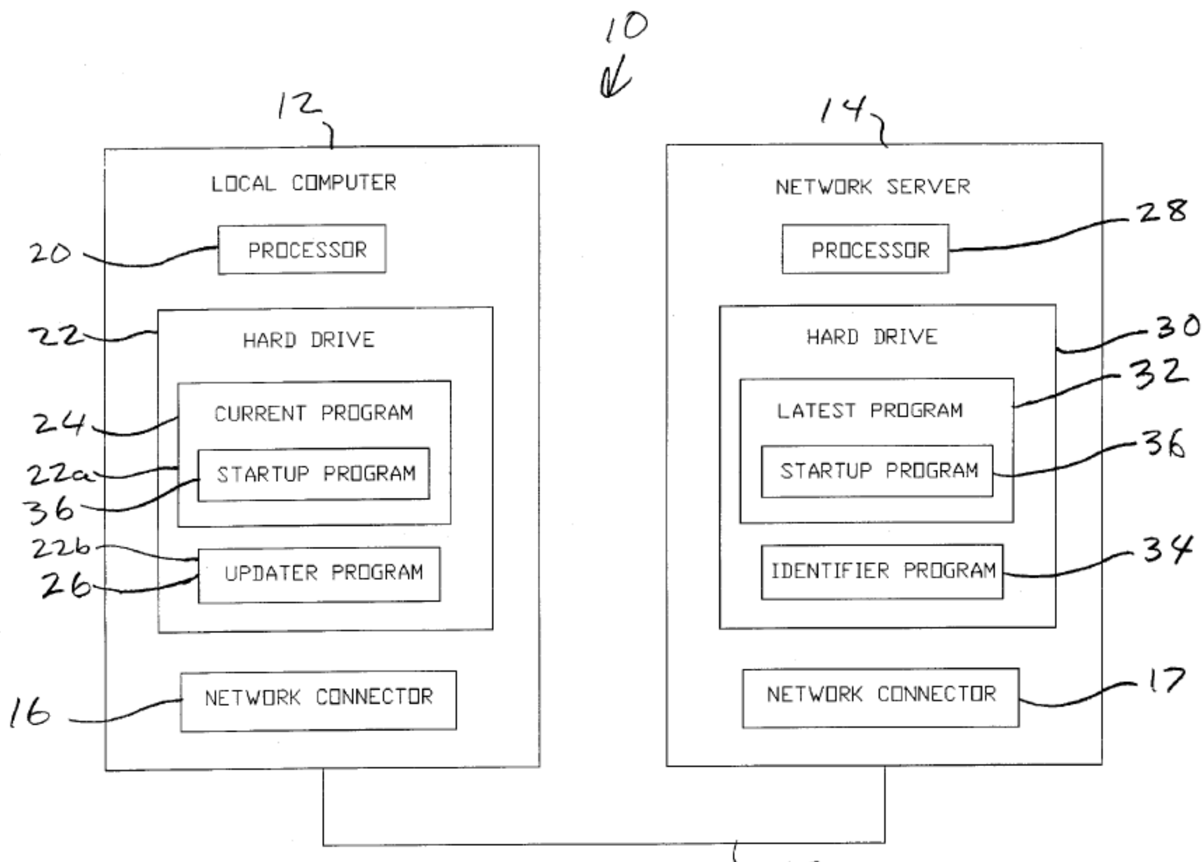


Fig. 1

3109. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Stylistic Tablet or Win98. Figure 3 of Kottapurath shows the process:

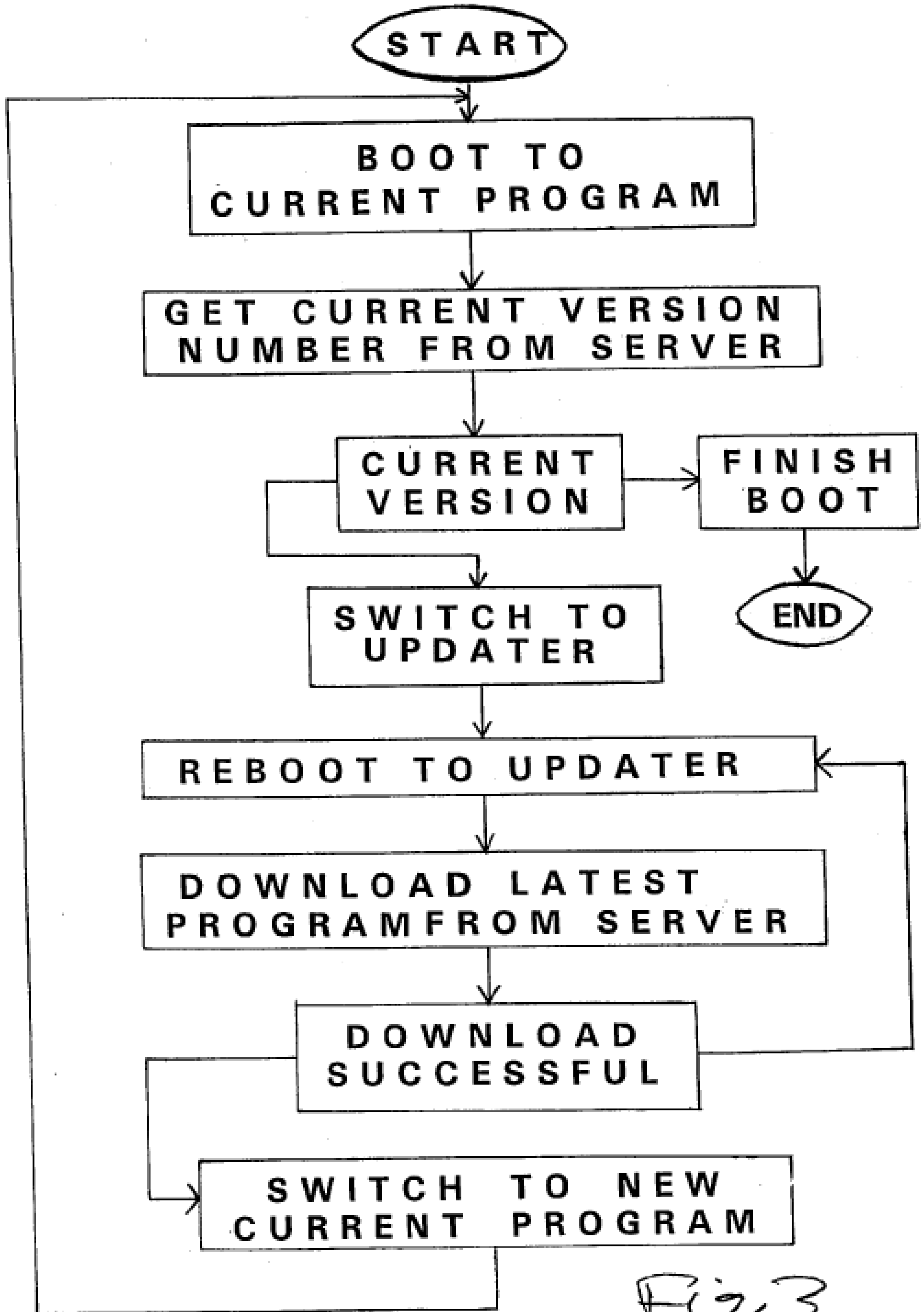

START
BOOT TO CURRENT PROGRAM
GET CURRENT VERSION NUMBER FROM SERVER
CURRENT VERSION
FINISH BOOT
END
SWITCH TO UPDATER
REBOOT TO UPDATER
DOWNLOAD LATEST PROGRAMFROM SERVER
DOWNLOAD SUCCESSFUL
SWITCH TO NEW CURRENT PROGRAM

Fig. 3

3110. Dr. Johnson then turns his attention to Kikinis, asserting that:

> Kikinis discloses a service, including an apparatus and software, "that enables users who have purchased an Internet appliance such as a WEB phone, for example, to obtain third-party assistance in setting-up and configuring the device for successful operation." Kikinis at 4:22-27. "Such Internet appliances include any device that is used for accessing and operating on the Internet, or other types of switch-packet networks that may stand alone or be linked to the Internet. Examples are WEB phones, WEB TV's, Palm-top computers, Internet capable cell phones, Laptop computers, and so on." *Id.* at 4:43-48. When "a user plugs in a specific Internet appliance . . . and insures that all hardware and connections are correct . . . the user calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased. The appliance is then connected to server 21." *Id.* at 8:22-29. The server then communicates with the Internet appliance to perform set-up operations, which may include software updates. *Id.* at 8:41-60, 6:26-35. A POSITA would have recognized that Kikinis's service involves a device automatically initiating a communications session with a server system (e.g., the server) upon connection to a power source and communications source. While Kikinis discloses obtaining the user's permission prior to connecting to the server, a POSITA would have found it obvious that obtaining the user's permission could be omitted. Doing so would enable the Internet appliance to contact the server and perform the setup automatically, which furthers Kikinis's goal of making the set-up process easy for the user. *See id.* at 3:6-10 ("What is clearly needed is a system including apparatus that allows a one-touch transparent set-up and configuration process that does not require much more than a user ID and account number or credit card number to successfully configure an Internet appliance.").

Johnson ¶1908.

3111. As shown above, Kikinis discloses that a device can call a 1-800 number to get assistance, but only when a user performs the call, or when a user gives permission for the device to perform the call. Kikinis thus does not disclose an automatic process. Dr. Johnson, recognizing this, essentially says that it would be "obvious that obtaining the user's permission could be omitted." Johnson ¶915. There is no suggestion in Kikinis to omit how Kikinis is disclosed to operate, and Dr. Johnson appears to only state it would be obvious to do so based on hindsight and a need to try to reach this claim element, neither of which is a proper motivation to modify Kikinis.

3112. In other words, Dr. Johnson asserts this step in Kikinis could be omitted so that one could view Kikinis as meeting a particular claim limitation of the '656 Patent. Dr. Johnson then

cites a portion of Kikinis in support of his assertions: "What is clearly needed is a system including apparatus that allows a one-touch transparent set-up and configuration process that does not require much more than a user ID and account number or credit card number to successfully configure an Internet appliance." Kikinis at 3:6-10.

3113. However, that portion of Kikinis belies Dr. Johnson's position. A POSITA would readily see that Kikinis is envisioning a user interaction involving a user ID and either an account number or credit card number. This is not automatic. In fact, Kikinis requires the user ID or credit card number to function, thus demonstrating that one could not alter Kikinis to perform this step automatically. However, Dr. Johnson does not point to anything in Kikinis that involves updating the operating system automatically or otherwise. Furthermore, Dr. Johnson admits that Kikinis does not perform automatically, but rather requires user permission. Dr. Johnson asserts it would have been obvious to make this automatic, however that ignores that Kikinis envisions using the telephone network via dial up: "In Step 37, a user plugs in a specific Internet appliance such as appliance 15 of FIG. 1, and insures that all hardware and connections are correct. In Step 39, the user calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased." Kikinis at 8:22-28.

3114. Automatically connecting via dial up would cause the users phone system to be automatically engaged, even if the user was currently using the phone. A POSITA would realize that such an automatic process is contrary to Kikinis.

3115. Dr. Johnson then states:

> A POSITA would have been motivated to incorporate the teachings of any one or more of Criss, Kottapurath, and/or Kikinis with the combination of Stylistic Tablet and Win98. Win98 is software that strives to "maintain[] itself" "all without requiring any work from" the user. *Using Windows 98* at 13. Criss, Kottapurath,

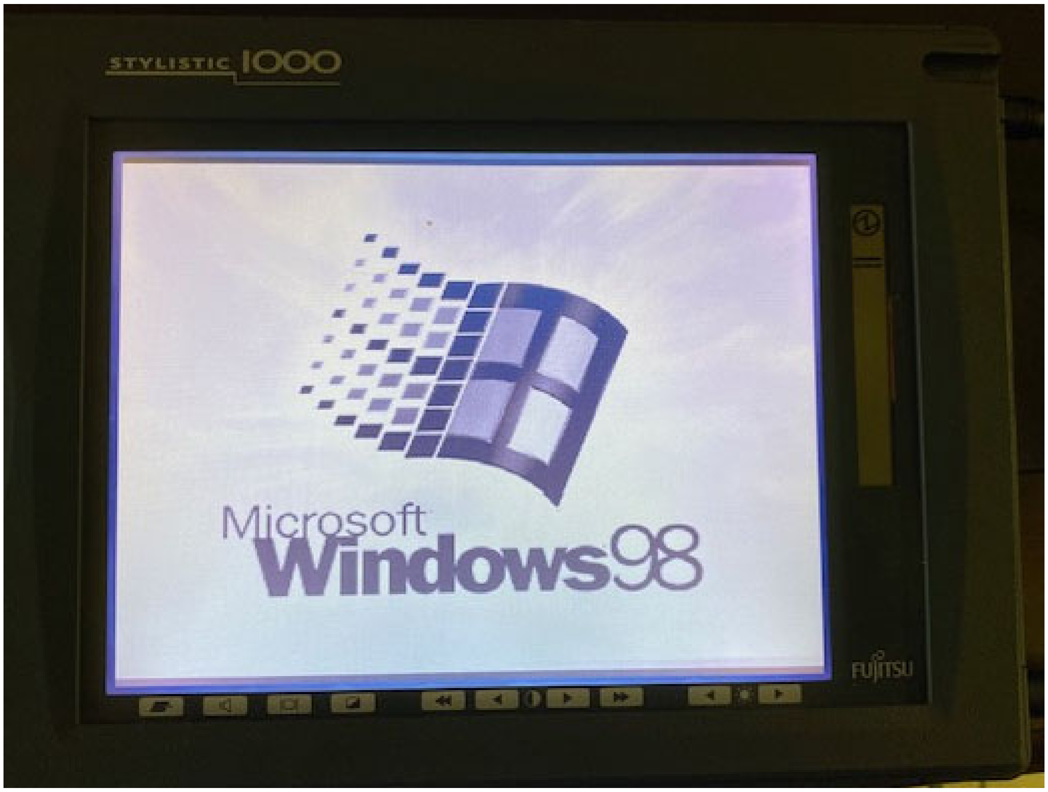
> and/or Kikinis each further this goal by providing means for the software to maintain itself by downloading updates or other data from a server via a network without requiring user intervention. *See, e.g.*, Criss at 2:41-45 ("In view of the aforementioned shortcomings associated with existing systems and techniques for upgrading mobile device operating software, there is a strong need in the art for a system and method which does not require significant down time or service costs."); Kottapurath at 1:29-43 ("It is desirable to have a mechanism whereby this process can take place automatically such that new versions of the software when installed on the server will migrate to the local computers on the network without user intervention. . . . The present invention overcomes the drawbacks of the prior art by providing a method and system by which a program such as an operating system which is stored on a local computer can be automatically updated from a network server upon startup of the local computer."); Kikinis at 4:3-7 ("The present invention in various embodiments provides for the first time a system whereby Internet appliances may be quickly and easily configured for use without effort or trouble on the part of a user, and by doing so, significantly expands the market and usability of such devices."). Such combinations are a combination of prior art elements according to known methods to yield predictable results as well as use of a known technique to improve a similar device, *e.g.*, a computing device, in the same way.

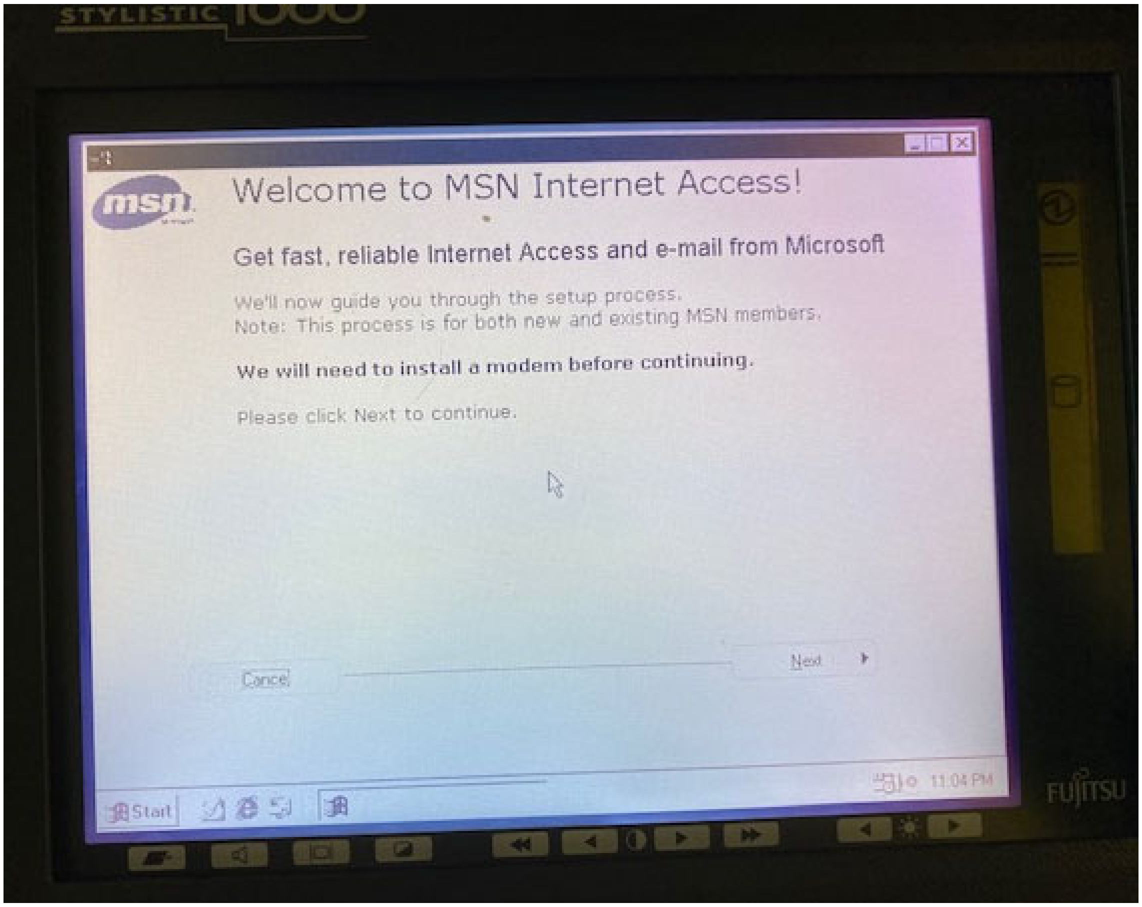
Johnson ¶1909.

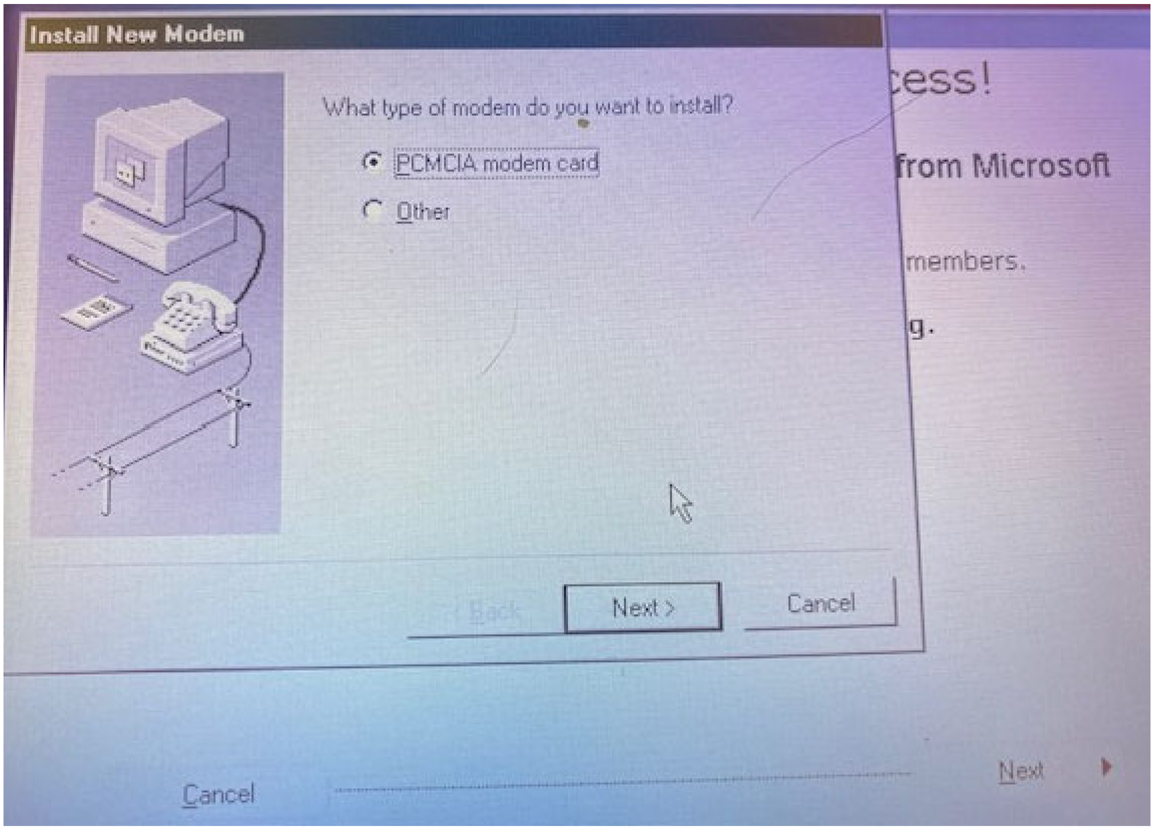
3116. Dr. Johnson's statements lack any real reasons why a POSITA would modify the Stylistic Tablet, even assuming it is running Win98, specifically, and instead appears to assert that one *could* theoretically modify it somehow to connect to a server and obtain software updates. Dr. Johnson does not describe why a POSITA would be motivated to modify the Stylistic Tablet running Win98 other than a general argument that "automatic" is desirable. Dr. Johnson thus does not provide an adequate motivation to combine and is simply based on hindsight reasoning. Also, as has been pointed out, these references are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

3117. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to

add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. Screenshots are provided here:




STYLISTIC
msn
Welcome to MSN Internet Access!
Get fast, reliable Internet Access and e-mail from Microsoft
We'll now guide you through the setup process.
Note: This process is for both new and existing MSN members.
We will need to install a modem before continuing.
Please click Next to continue.
Cancel
Next
Start
11:04 PM
FUJITSU



3118. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

3119. The Fujitsu Stylistic Tablet has no mechanism to automatically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem. PCMCIA functionality is found in 1-3 of the Stylistic Tablet 1000 Technical Reference Guide. Programmable System Functions are found at 4-1. The Fujitsu Tablet does support Infra Red, however that only works with direct line of site.

3120. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. Even if one were to use the Stylistic 1000 RF, the maximum connection speed was 1.6 megabits per second. This is inadequate for the items Dr. Johnson proposes using it for such as subscribing to web pages.

3121. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites the Using Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[273]

3122. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98, Criss, Kottapurath, and/or Kikinis does not anticipate or render obvious this claim limitation.

iii. Claim [1(f)] sending a request for image data to said server system via said communications network;

3123. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

3124. Dr. Johnson again relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages," and the "Active Channel" and "Active Desktop" features of Win98 that he alleges "automatically search for and download new content from subscribed websites each time a user powers-up a computer and starts-up Win98, so that the user will be greeted with fresh contents on its Active Desktop and/or Active Channels, instead of stale ones." Johnson ¶1910. This is not image data. Furthermore, this does not occur due to a display device automatically issuing a request. Quite the contrary, the user must take specific steps to subscribe. In fact, Dr. Johnson cites the *Using*

[273] Using Windows 98 Platinum Edition, page 968.

Windows 98 book which states: "The dialog box allows a user to 'create a custom schedule, using a dizzying variety of options.'" Johnson ¶1719 (quoting *Using Windows 98* at 689-90).

3125. I first note that this is chapter 33, titled "Web Subscriptions and the Active Desktop," which begins at page 678. A POSITA would notice the numerous differences between what is described in Windows 98 and the claim limitation. The first difference is that Windows 98 is disclosing updating a web page, which may or may not have images. The second, and more important issue, is the claim limitation requires an automatic connection with ***said first remote server system***, which, as I have explained, would not have been possible with the Stylistic Tablet.

3126. Dr. Johnson then states: "To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious, in view of the teachings of any one or more of Criss, Kottapurath, and/or Kikinis." Johnson ¶1911.

3127. This appears to be a tacit admission that the Stylistic Tablet with Windows 98 does not disclose this claim limitation. On that point, I agree with Dr. Johnson. Furthermore, as I explained above with respect to Criss, Kottapurath, and Kikinis, Dr. Johnson provides insufficient motivation to combine and insufficient details on how he envisions a POSITA combining these asserted prior art citations, nor what portions he believes would be combined.

3128. Dr. Johnson then states: "Furthermore, image data is just a type of data, and a POSITA would have recognized that requesting various types of data is obvious because using computers to request data from other computers is conventional." Johnson ¶1912. This ignores the claim language, which is sending a request for image data to said server. The *said server*, denotes a previously described server. Thus, not only does the data need to be image data, but the connection to the server in question has to meet the other limitations of the '930 Patent claims. Dr. Johnson does not even attempt to show this.

3129. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Criss, Kottapurath, and/or Kikinis does not anticipate or render obvious this claim limitation.

iv. Claim [1(g)] receiving image data and authentication information from said server system in response to said request; [1(h)] authenticating said server system;

3130. As described above, the cited references do not disclose or suggest receiving image data in response to a request. The cited references also do not disclose or suggest receiving authentication information from said server system in response to said request, nor authenticating said server system.

3131. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

3132. Dr. Johnson again points to the Stylistic Tablet running Windows 98 subscribing to a web page. Johnson ¶1913. As has been discussed previously in this report, that does not meet this claim limitation.

3133. Dr. Johnson then states: "To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious, in view of the teachings of any one or more of Criss, Kottapurath, and/or Kikinis, for the computer readable instructions to cause the display device to receive image data and authentication information from said server system in response to said request." Johnson ¶1914.

3134. This appears to be a tacit admission that the Stylistic Tablet running Windows 98 does not actually disclose this claim limitation. On that point, I agree with Dr. Johnson. Furthermore, Dr. Johnson provides no details on how he envisions a POSITA combining these asserted prior art citations, nor what portions he believes would be combined.

3135. Dr. Johnson simply refers to portions of the book *Using Windows 98* that refer to authentication of websites generally. Johnson ¶1916-17. The portions of *Using Windows 98* state:

- Authentication. When you connect to a website, how do you know who's really running that server? When you download and run a program, how do you know that it hasn't been tampered with or infected with a virus? When extremely sensitive information is involved, you may want to insist on secure connections guaranteed by digital certificates.

- Encryption. Certain types of data-usernames and passwords, credit card numbers, and confidential banking information, for example-are too sensitive to be sent "in the clear," where they can be read by anyone who can intercept the packets. For these transactions, only secure, encrypted connections are acceptable.

- Control over executable content. The Internet is filled with programs and add-ins that can expand the capabilities of your browser. Unfortunately, poorly written or malicious add-ins can carry viruses, corrupt valuable data, and even expose your network to unauthorized break-ins. On most networks, administrators try to limit the potential for damage by restricting the types of files that users can download and run.[274]

3136. Dr. Johnson also emphasizes that *Using Windows 98* discusses using "digital certificates." Johnson ¶1754 (quoting *Using Windows 98* at 665-66, 670, 743-34). I note that Dr. Johnson conflates the Internet Explorer browser reviewing a website's digital certificate for websites that offer such a certificate, with receiving authentication information from said server system.

3137. Also, for the "sending a request" claim element, Dr. Johnson relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages," and the "Active Channel" feature that he alleges "allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster." Johnson ¶1910-12. There is no evidence that these subscription features include authentication as

[274] Using Windows 98, 654.

part of their processes, nor that these subscription features used digital certificates or anything else the general description of authentication in Windows 98 is referring to. Moreover, Dr. Johnson makes no attempt to explain how *Using Windows 98*'s general description of authentication is tied to these other subscription features. Therefore, even if the Stylistic Tablet could be combined with Win98, there is no suggestion that these subscription tools that form the basis for most of Dr. Johnson's positions for previous claim elements use or require authentication before receiving subscription content.

3138. Dr. Johnson does not address how the subscription services allegedly provided by Windows 98 would use or be modified to use digital certificates for authentication. As I have explained in this report, implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. The subscription services Dr. Johnson relies on receive content from websites, but there would be no way to force servers serving such website content to use digital certificates. For at least these reasons, Dr. Johnson's analysis is deficient.

3139. Further, Dr. Johnson ignores that network authentication only applies if one wishes to authenticate to a particular network. Windows 98 will allow the user to login locally and use the full functionality of Windows 98 without authenticating to any network. The Fujitsu Stylistic Tablet is designed to work without any network or remote server. In fact, the only way one could connect to any network or server is to first purchase a separate PCMCIA modem, install that modem, then dial into a network whenever a connection is desired. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. A review of the Stylistic 1000 technical reference guide shows no reference to any network card. The

only possibility for networking is to add a modem such as a PCMCIA modem card or network card.

3140. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

3141. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Criss, Kattopurath, and/or Kikinis does not anticipate or render obvious this claim limitation.

v. Claim [1(i)] storing said received image data in said memory;

3142. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

3143. As was discussed earlier in this report, the Stylistic Tablet is not receiving image data, but rather web pages that might incidentally include an image.

3144. Also, I note that this element cannot be met for the same reasons as elements [1(f)] and [1(g)] of the '656 Patent because, since the references do not disclose or suggest "sending a request for image data to said server system via said communications network" and "receiving image data," then Stylistic Tablet running Win98 cannot disclose or suggest storing ***said received*** image data.

3145. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98, Criss, Kattopurath, and/or Kikinis does not anticipate or render obvious this claim limitation.

vi. Claim [1(j)] displaying said image data on said display screen;

3146. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

3147. As was discussed earlier in this report, the Stylistic Tablet is not receiving image data, but rather web pages that might incidentally include an image.

3148. Second, I note that this element cannot be met for the same reasons as elements [1(f)], [1(g)], and [1(i)] of the '656 Patent because, since the references do not disclose or suggest "sending a request for image data to said server system via said communications network" and "receiving image data," then Stylistic Tablet running Win98cannot disclose or suggest displaying ***said*** image data.

3149. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98, Criss, Kattopurath, and/or Kikinis does not anticipate or render obvious this claim limitation.

vii. Claim [1(k)] receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network; [1(l)] automatically updating said computer readable instructions for controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device;

3150. First, I note that Claim 1 is structured such that this step occurs as part of the communications session automatically initiated by the display device in the prior step, which the cited references do not disclose or suggest, and thus this claim element cannot be met either.

3151. Dr. Johnson asserts: "To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious for the display device to receive updated computer readable instructions for controlling the operation of said display device from said server system

via said communications network. As discussed above, causing an electronic device to automatically communicate with a server system upon power-up was well known prior to the filing date of the '656 Patent in view of at least Criss, Kottapurath, and/or Kikinis." Johnson ¶1922.

3152. As has been thoroughly discussed in this report, the claim limitation references *said display device*. That requires a display device that connects to a server system in a way that meets the claim limitations of the '656 Patent. As has been thoroughly demonstrated, the Stylistic Tablet, even if combined with Win98, does not meet these claim limitations and thus cannot be the *said display device*.

3153. I also note that this appears to be a tacit admission that the Stylistic Tablet running Windows 98 does not disclose this claim limitation. On that point, I agree with Dr. Johnson.

3154. Dr. Johnson first discusses Criss. Johnson ¶¶1923, 1927. First, as has been discussed previously in this report, Criss is in an entirely different field. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. This is in an entirely different field than the Stylistic Tablet and Win98, which are a personal computing device and an operating system, respectively. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). And again, a review of undergraduate courses in computer science at Rice University,[275] where Dr. Johnson is a professor reveals not a single course in telecommunications. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at,

275 https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

would not have been skilled in the primary field of Criss. A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

3155. Again, Dr. Johnson ignores the substantial infrastructure required for Criss to communicate: "When a mobile terminal 36 within the system initially powers up (via an on/off Switch for example) or is reset, the mobile terminal 36 goes through an initialization, or boot-up routine. Such routine includes communicating with the host computer 30 via a selected base station 26 in order that the host computer 30 provides the mobile terminal 36 with its internet protocol (IP) address as is conventional." Criss at 7:22-28. A POSITA would immediately see that Criss is not even describing a computer, like the Stylistic device, but rather a mobile terminal that in turn needs to communicate with a host computer via a base station.

3156. Base stations are integral to Criss working. This is shown throughout Criss, including in figure 1 shown here:

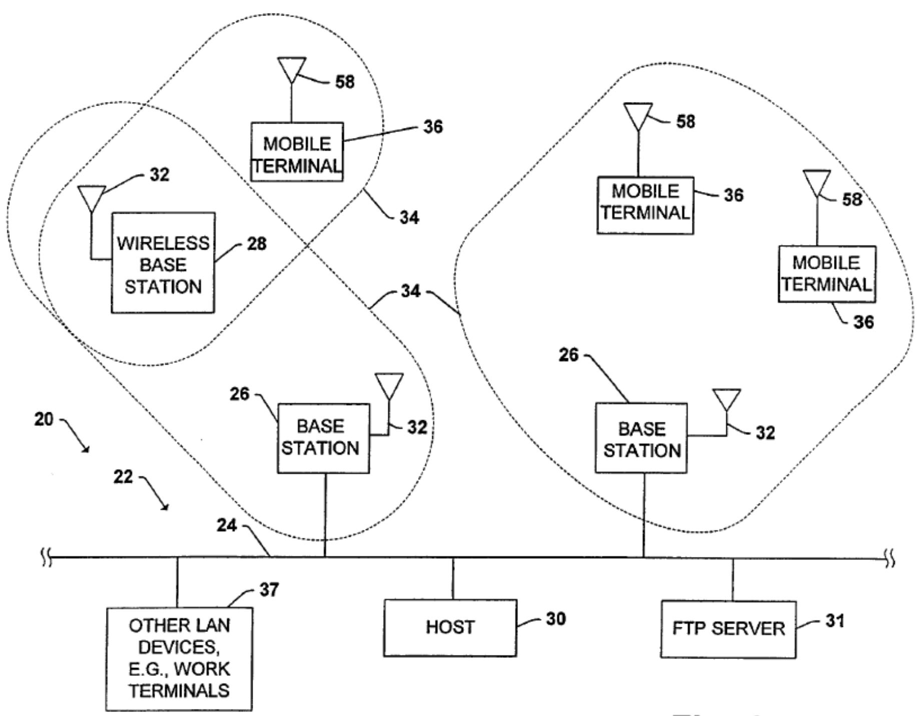


Fig. 1

3157. Criss describes a process in which a mobile device communicates with a host computer 30 that "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" A host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

3158. Criss thus discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '656 Patent at 5:14-26 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Stylistic Tablet running Win98, this combination would not reach the claims of the Patents-in-Suit.

3159. Also, Dr. Johnson does not discuss how the extensive infrastructure needed for Criss to work would be fused with the Stylistic Tablet running Windows 98. In fact, Dr. Johnson does not even mention how these base stations that are required Criss to communicate would be incorporated.

3160. Furthermore, Dr. Johnson's description of Criss is inaccurate "For example, as discussed above, Criss discloses a host computer that queries the mobile terminal upon power-up to identify the version of operating system software the terminal is running and, if appropriate, causes the terminal to update its operating system software to the latest version received from an FTP server." Johnson ¶1923. What Criss discloses however is "When a mobile terminal 36 within the system initially powers up (via an on/off Switch for example) or is reset, the mobile terminal 36 goes through an initialization, or boot-up routine. Such routine includes communicating with the host computer 30 via a selected base station 26 in order that the host computer 30 provides the mobile terminal 36 with its internet protocol (IP) address as is conventional." Criss at 7:22-28.

3161. This process is that a mobile terminal first communicates with a host computer via a base station. Dr. Johnson omits the role of the base station in this process. Dr. Johnson does not specify which component he believes is the "device" of the '656 Patent.

3162. A POSITA would note that the only appearance of "automatic," "automatically," or similar terminology in Criss is the following: "Additional features of both the data keeper 510 and time keeper 525, such as automatically adjusting for daylight Savings time and/or leap year variations, is also preferably programmed into the processor 40 in accordance with known techniques in the art." Criss at 24:18-23.

3163. Dr. Johnson then turns his attention to Kottapurath, asserting that Kottapurath discloses upgrading software. Johnson ¶¶1924, 1928 (quoting Kottapurath at 3:38-40). However, Dr. Johnson ignores the fact that Kottapurath requires an interrogation code segment on the device and an identifier program on the server. It is not even clear that the interrogation code of Kottapurath could run on a Stylistic Tablet running Windows 98. It should be noted that Kottapurath never mentions Windows, but only MS DOS or UNIX. Kottapurath at 3:14-20.

3164. As was previously discussed in this report, Kottapurath has extensive requirements that would have required substantial work and undue experimentation to combine with the other prior art citations. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

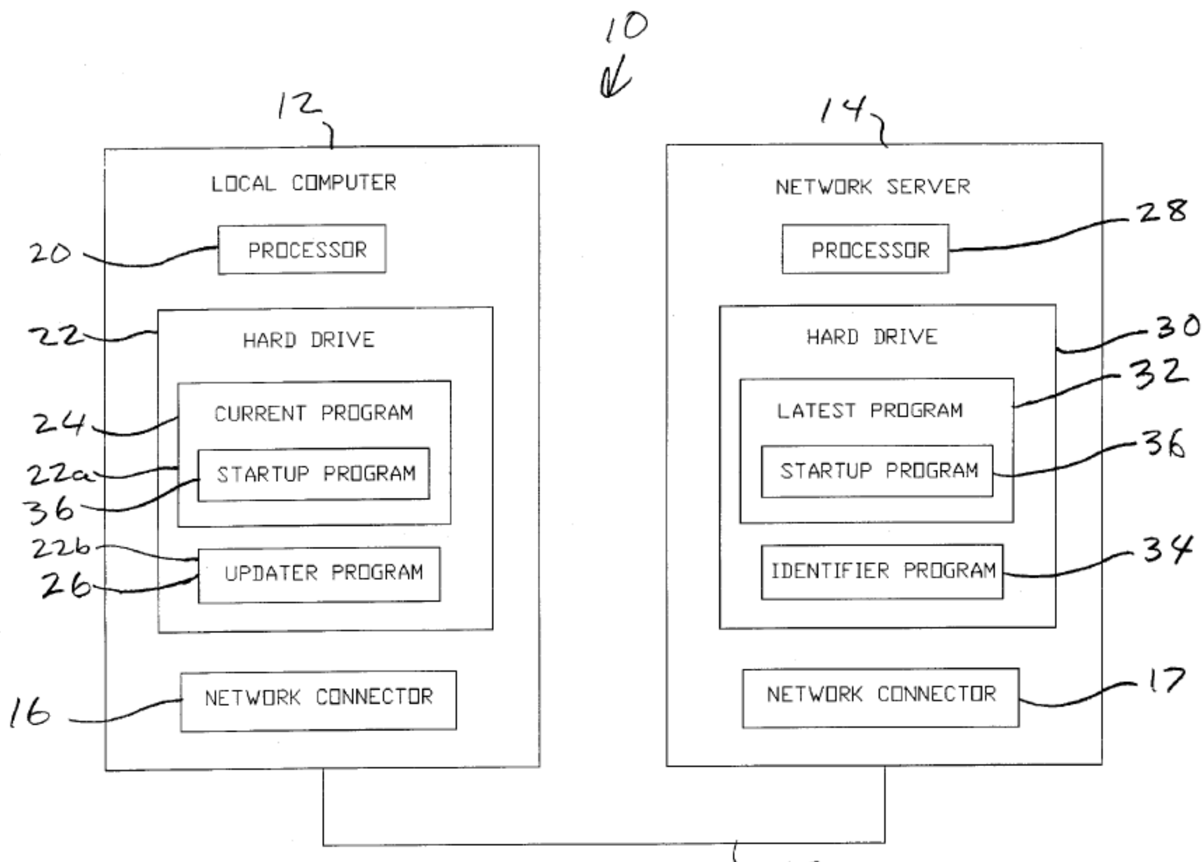


Fig. 1

3165. A POISTA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements with Stylistic Tablet running Win98. Figure 3 of Kottapurath shows the process:

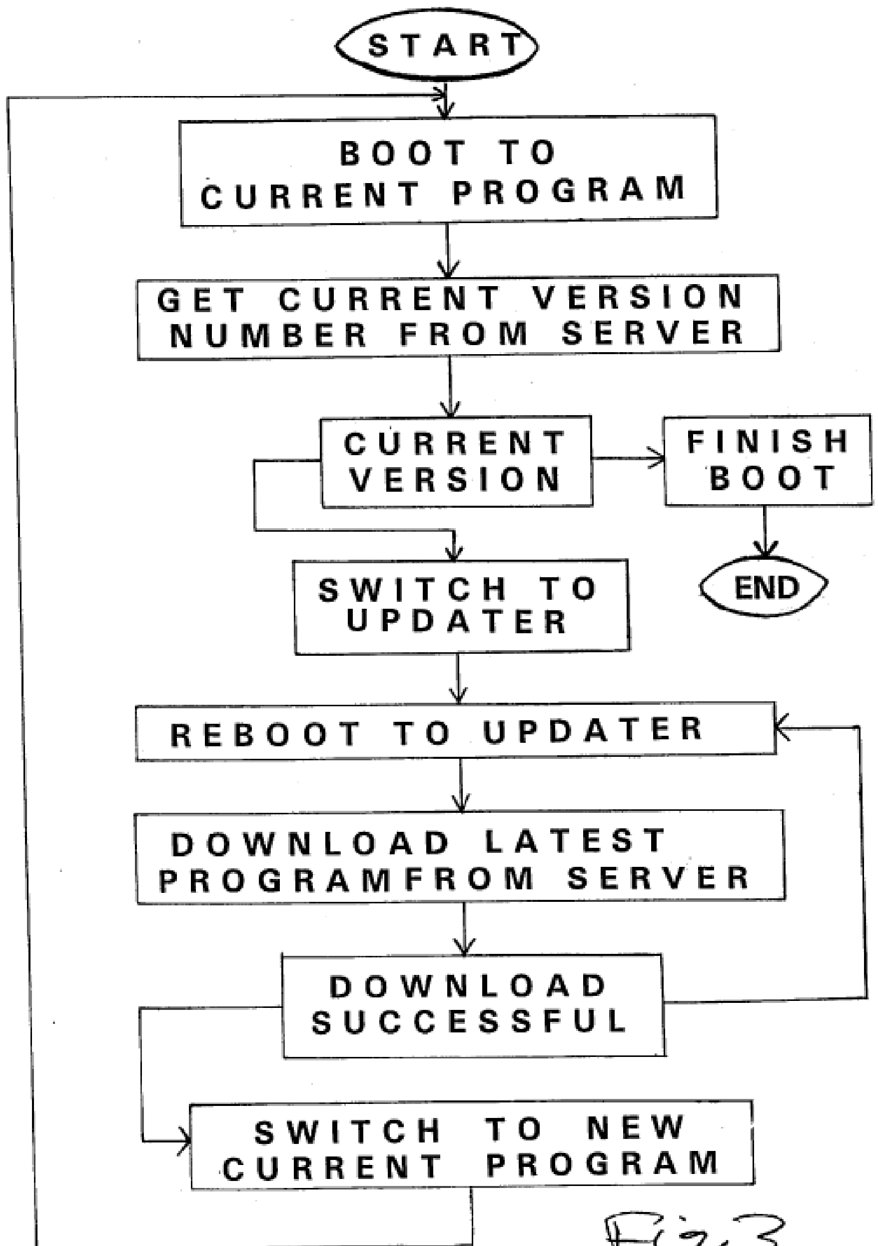


Fig. 3

3166. Regarding Kikins, as I have explained above, Kikinis discloses that a device can call a 1-800 number to get assistance, but only when a user performs the call, or when a user gives permission for the device to perform the call. Kikinis thus does not disclose an automatic process. Dr. Johnson, recognizing this, essentially says that it would be "obvious that obtaining the user's

permission could be omitted." Johnson ¶915. There is no suggestion in Kikinis to omit how Kikinis is disclosed to operate.

3167. A POSITA would readily see that Kikinis is envisioning a user interaction involving a user ID and either an account number or credit card number. This is not automatic. In fact, Kikinis requires the user ID or credit card number to function, thus demonstrating that one could not alter Kikinis to perform this step automatically. However, Dr. Johnson does not point to anything in Kikinis that involves updating software automatically or otherwise.

3168. Automatically connecting via dial up would cause the users phone system to be automatically engaged, even if the user was currently using the phone. A POSITA would realize that such an automatic process is contrary to Kikinis.

3169. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

viii. Claim [1(m)] said computer readable instructions for controlling the operation of said display device further comprising instructions for causing said display device to instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device.

3170. Dr. Johnson again refers to the "Active Desktop" feature of Win98. Johnson ¶1930. However, the quote that Dr. Johnson uses only states that Active Desktop allows the user to select a desktop background. A POSITA would first note that this is happening on Windows 98, not on a server, much less the ***said server system*** of the '930 Patent.

3171. The Active Desktop Gallery that Dr. Johnson points to is only a place where a user might download components: "Microsoft's Active Desktop Gallery includes an assortment of interesting desktop components, including a useful search box, stock tickers, and several clocks. Browse the entire collection at the following address http://www.microsoft.com/ie/ie40/gallery"

(*Using Windows 98* Platinum Edition page 682). Dr. Johnson erroneously states "A POSITA would have understood that the Active Desktop Gallery interface is caused to be created by a GET command issued by the browser software to the server at http://www.microsoft.com/ie/ie40/gallery." Johnson ¶1931. This claim element recites that the display device instructs the server system to create an interface, and Dr. Johnson does not show how a "GET command" creates an interface. A GET command is simply a command to retrieve data.

3172. A POSITA would recognize that this is not instructions for controlling the operation of the display device that instruct a server system to create an interface, rather it is an option wherein a user can simply go to a website and download items if the user wishes. It should also be noted, relevant to other claim limitations, that this website that Dr. Johnson cites uses HTTP, not HTTPS, and thus does not use digital certificates or authentication. Dr. Johnson, therefore, ignores the other claim elements and the claims as a whole.

3173. The '656 Patent explains that:

> The initialization process begins at step 800 when the frame device is connected to a power Source and a communication medium such as a telephone line or network connection. The frame device may be configured to automatically connect via a wireless connection or the user may manually couple it to a power source and communication medium.
>
> . . .
>
> At step 805, the data repository is analyzed to determine whether there is a record for the frame device initiating the connection. If a record for the frame device is not located, step 807 executes and an image prompting the user to create a picture box account associated with that frame device is displayed to the user.
>
> . . .
>
> Once the picture box is obtained, step 813 executes, at step 813 the behavior characteristics of the frame device is determined. The behavior characteristics may be established by default or customized according to the user's preferences. When the behavior characteristics are determined, step 815 executes. At step 815, the

> invention contemplates loading the behavior characteristics into the data repository for use by the frame device.

'930 Patent at 23:64-24:3, 24:15-21, 24:44-51.

3174. Therefore, this prompting by the display device to create the interface as described, for example, in this portion of the '656 Patent refers to an automatic initialization process carried out by the display apparatus to ensure the user has a record and picture box interface associated with the remote server system. This is not disclosed in Win98. Again, Dr. Johnson only cites retrieving information for display in a web browser via a GET command.

3175. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

ix. Claim [2.] The display device of claim 1 wherein said computer readable instructions for storing said image data in said memory further comprise instructions for causing image data previously stored in said memory to be replaced with said received image data.

3176. I first note that Dr. Johnson again conflates web pages with image data stating: "For example, Win98 automatically stores web pages in local memories for a limited time. Each time a user "retrieve[s] a new web page, Internet Explorer downloads every element and stores a copy of each one in a cache directory on your hard disk." Johnson ¶1932. "The next time [the user] request[s] that page, the browser first checks the cache; if it finds a copy of the page, it loads the entire document from fast local storage, which dramatically increases performance." Johnson ¶1932.

3177. However, even if one agrees with Dr. Johnson, and I do not, nothing in his citation or report discloses "data previously stored in said memory to be ***replaced*** with…." Dr. Johnson states that "only the most recent cache of a web page is kept." Johnson ¶1932. However, Chapter 30 of *Using Windows 98*, which Dr. Johnson is relying on, does not state that. In fact, that chapter

says quite the opposite "When the cache fills up, Internet Explorer throws out the oldest files in the cache to make room for new ones." A POSITA would understand that if old versions were being immediately replaced by new ones, as Dr. Johnson asserts, it would be incredibly difficult to fill up the cache.

3178. Dr. Johnson also asserts that Criss and Kottapurath could be combined with Stylistic Tablet running Win98 to attempt to reach this claim element. Johnson ¶¶1933-38. As I explained with respect to Claim 1 of the '656 Patent, such combinations are deficient.

3179. Dr. Johnson then turns to Criss. Johnson ¶1934. Dr. Johnson first states "A POSITA would have understood that the updating of said computer readable instructions with the new version is necessarily automatic because the device would have been rendered inoperable without operating software." Johnson ¶1934. This ignores the fact that Windows 98, which Dr. Johnson cites frequently, has a manual update process. Dr. Johnson's assertions are refuted by one of his own citations.

3180. Dr. Johnson then states: "Furthermore, a POSITA would have found it obvious that the update of the operating system and application program provided by these references may include image data, such as for images that are displayed during operation of the operating system or application program (e.g., dialog boxes, screensavers, sample images, etc.). For example, Win98 displays the following logo image upon startup." Johnson ¶1935.

3181. A POSITA would first note that the logo of an operating system does not change with most updates, unless one goes to a new version. Furthermore, Dr. Johnson is making an assumption and not pointing to any evidence.

3182. As has been discussed previously in this report, Criss requires an extensive infrastructure. "When a mobile terminal 36 within the system initially powers up (via an on/off

Switch for example) or is reset, the mobile terminal 36 goes through an initialization, or boot-up routine. Such routine includes communicating with the host computer 30 via a selected base station 26 in order that the host computer 30 provides the mobile terminal 36 with its internet protocol (IP) address as is conventional." Criss at 7:22-28.

3183. Base stations are integral to the operation of Criss. This is shown throughout Criss, including in figure 1 shown here:

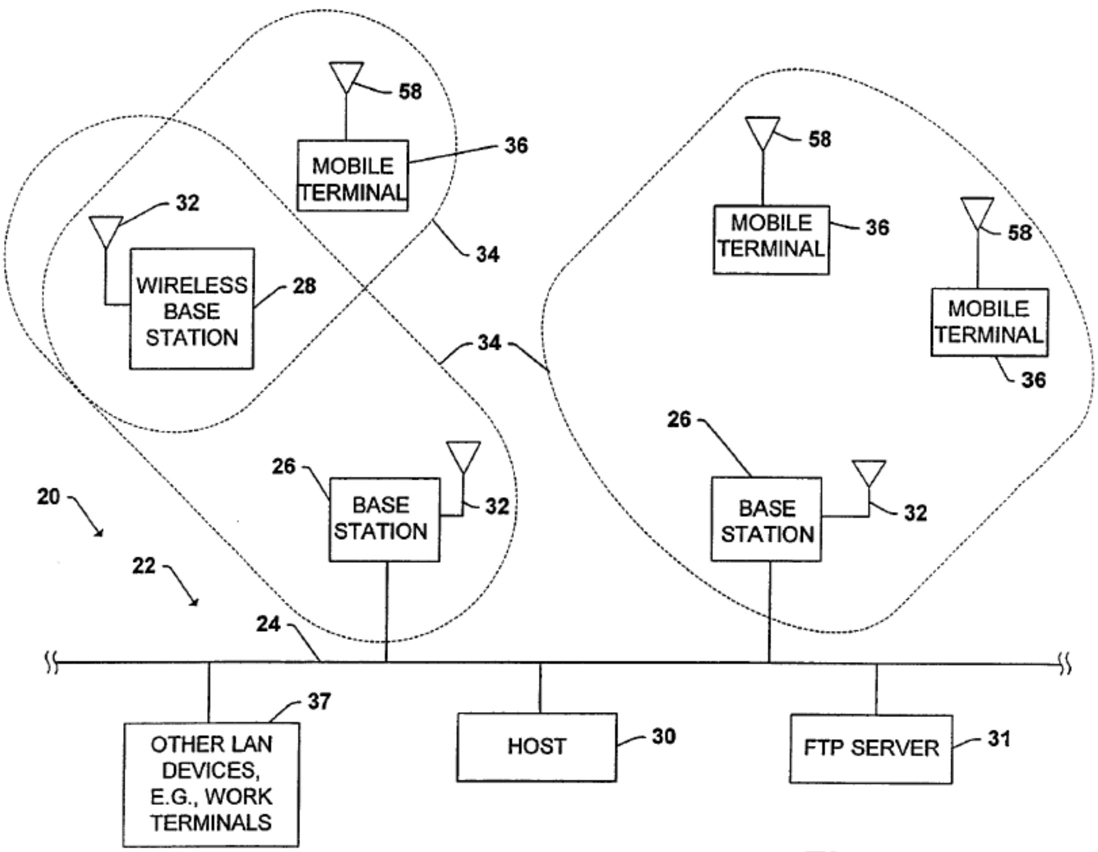


Fig. 1

3184. Criss can only communicate due to this extensive infrastructure. A POSITA would recognize that this requires the base stations. Contrary to Dr. Johnson's assertions, it is likely that

a POSITA would not have been able to combine Criss with Windows 98, given the extensive infrastructure required by Criss.

3185. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶1937. In addition to the reasons I discussed with respect to Claim 1 for the combination of Stylistic Tablet, Win98, and Kottapurath not meeting the software update claim elements, additionally, Kottapurath is directed towards updating an operating system, but Windows 98 already has an update process, and one that Dr. Johnson points to repeatedly in his report. There is no reason for a POSITA to combine Windows 98 with Kottapurath.

3186. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

x. Claim [5.] The display device of claim 1 wherein said memory further comprises preference information for controlling the display of said image data by said display device.

3187. Dr. Johnson points to ""desktop themes," "screen resolution," "color and text schemes," "refresh rate," etc." of Windows 98. Johnson ¶1942. I first note that Dr. Johnson appears to be unaware that the Fujitsu Stylistic Tablet 1000 has models that have a black and white display and without color.

3188. It should be noted that the preference information of the '656 Patent is information that allows one to control the sequence and duration of images displayed. Color and text schemes, refresh rate, and screen resolution do not do that and therefore cannot be the preference information described in the '656 Patent.

3189. The '656 Patent first distinguishes itself from prior art stating "Current electronic mail systems cannot, for example, automatically connect to an image source, obtain image data for display, and then automatically display the image data according to a set of predetermined preferences" ('656 3:47-50). The '656 Patent goes on to describe preferences as follows "Each

frame device is configured to automatically interface with the data repository to obtain image data and to then display that data according to a set of preferences" ('656 8:34-37).

3190. A POSITA would readily understand that screen resolution, color and text schemes, and refresh rate simply do disclose the preferences of the '656 Patent. Desktop Themes set background, font and similar items but do nothing to 'automatically connect to an image source, obtain image data for display, then automatically display the image data."

3191. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

xi. Claim [6.] The display device of claim 5 wherein said preference information comprises communication timing information for specifying the timing of sending requests for image data to said server system.

3192. Dr. Johnson again points to Windows 98 subscriptions. Dr. Johnson is again conflating what Windows 98 might do if installed on a PC connected to a network, with what Windows 98 can do if installed on the Fujitsu Stylistic PC.

3193. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

3194. If one were to use this with Stylistic Tablet 1000, the result would be limited to 1.6 megabits per second.

3195. Furthermore, the "said server system" of this claim limitation is referring to the server described in claim 1. The claim recites authenticating said server system (i.e., the server

system is authenticated) and receiving updates to the software from that server system. The web servers that Dr. Johnson points to could not be the server system recited in this claim and in claim 1. A POSITA would recognize that claim 6 does not merely require any server with image data, but it must be a server system that meets the limitations of claim 1.

3196. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. A POSITA would understand that Windows 98 subscriptions would not work on Windows 98 running on the Fujitsu Stylistic Tablet.

3197. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

xii. Claim [7.] The display device of claim 5 wherein said preference information comprises display timing information for specifying the timing of displaying said image data on said display screen.

3198. For this claim limitation Dr. Johnson points to Windows 98 screensavers. A POSITA would first note that the Stylistic Tablet (1000 or 1000 RF) does not come with Windows 98. Furthermore, a POSITA would understand that claim 7 states “said image data,” referring to an antecedent image data. The antecedent is found in claim 1. The said image data is image data that was stored after receipt from the server system, and after the server system has been authenticated (as explained in claim 1). As I explained with respect to claim 1, the screen savers that Dr. Johnson points to are part of Windows 98. They are not retrieved from any server, much less the server system described in claim 1.

3199. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

xiii. Claim [8.] The display device of claim 5 wherein said preference information comprises an image display list.

3200. Claim 8 is not met for the same reasons as Claims 1 and 5.

3201. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

6. Claims 1, 4, 11, 16, 17, and 20 of the '562 Patent are valid in view of Stylistic Tablet in combination with Win98, and one of Criss, Kottapurath, or Kikinis

3202. As was discussed previously, a POSITA would not have combined Criss with either the Stylistic Tablet, Win98, Kottapurath, or Kikinis. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Telecommunications, the primary field of Criss. Nor does Dr. Johnson's description of a POSITA indicate any skill in mobile devices, which are mentioned 129 times in Criss. It is more likely than not that a POSITA as described by Dr. Johnson would not be able to combine Criss with anything.

3203. Criss also requires an extensive infrastructure. "When a mobile terminal 36 within the system initially powers up (via an on/off Switch for example) or is reset, the mobile terminal 36 goes through an initialization, or boot-up routine. Such routine includes communicating with the host computer 30 via a selected base station 26 in order that the host computer 30 provides the mobile terminal 36 with its internet protocol (IP) address as is conventional." Criss at 7:22-28.

3204. Base stations are integral to the operation of Criss. This is shown throughout Criss, including in figure 1 shown here:

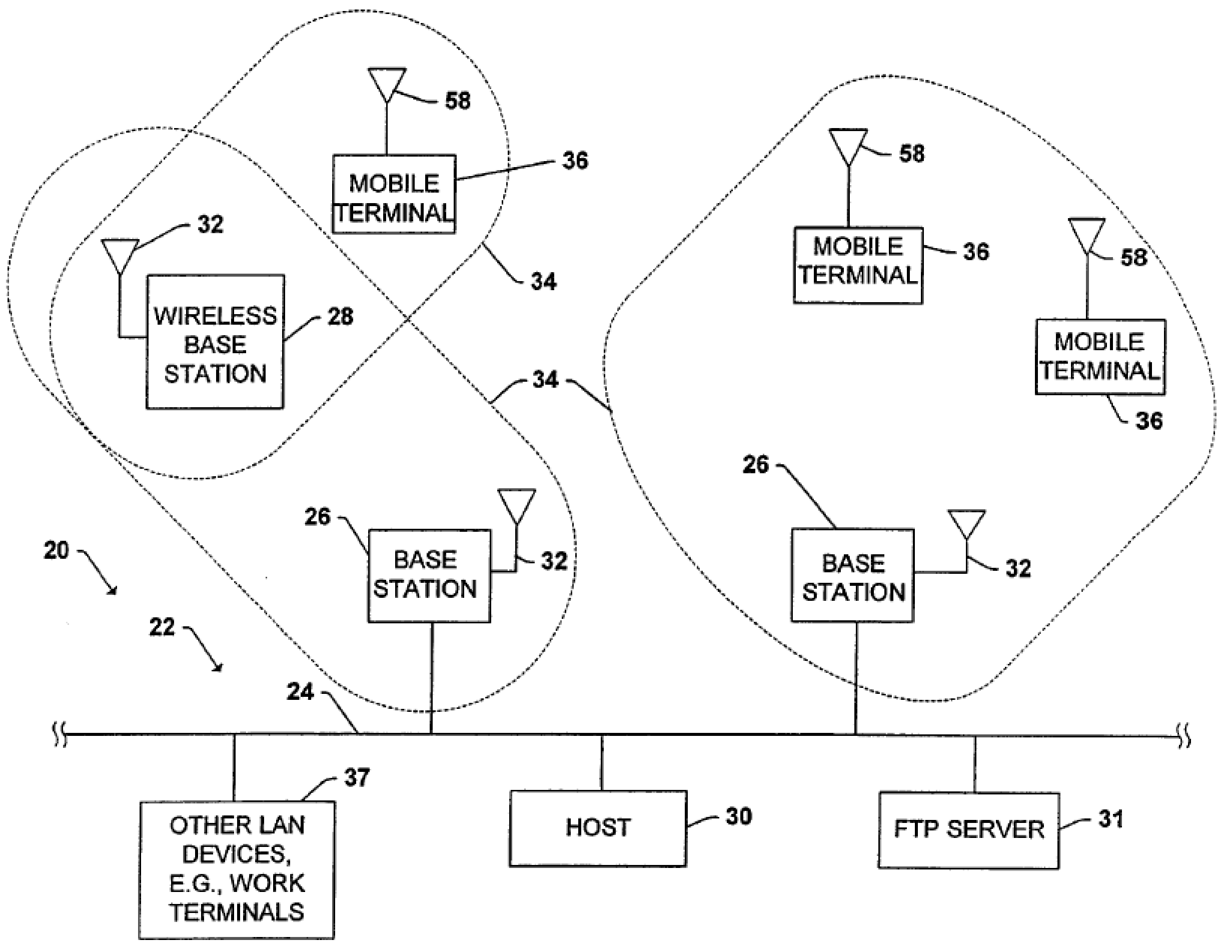


Fig. 1

3205. Criss can only communicate due to this extensive infrastructure. A POSITA would recognize that this requires the base stations.

3206. Furthermore, a POSITA would understand Kikinis has no frame device and is not directed towards displaying images. Furthermore, Kikinis does not disclose an automatic update, but rather the initial configuration of a web appliance.

3207. As has already been discussed, the Stylistic Tablet did not come with Windows 98 ana POSITA would not have been motivated to combine the Stylistic Tablet with Windows 98.

i. Claim [1.pre] An apparatus for displaying content comprising image data received from a server system via a communications network on a display screen comprising:

3208. Dr. Johnson first merely describes the various physical components of the Stylistic Tablet, such as the type of screen it had, the "Proxim RangeLAN2" radio, and RS-232C Serial ports. Johnson ¶1950-53. RS-232C serial ports were for, as the name suggests, serial cable communications. This involves two computers in close proximity with a serial cable between them.

3209. Dr. Johnson then states that Win98 allowed users to view web pages in a browser. Johnson ¶1953. As has been discussed previously, web pages are not image data. They are HTML documents that may or may not also include images. Dr. Johnson appears to be alleging again here that this means the Stylistic Tablet running Win98 could obtain images for display from a server system. Johnson ¶1702. Web pages are served from various web servers hosted by various entities and, while web pages can include images as part of the web page, this would not be understood to be the same as that described in the Patents-in-Suit. For example, the server image repository in the Patents-in-Suit is described as "a centralized repository" that is "populated with image data via the image collection process," *see, e.g.*, '573 Patent at Abstract, and "stores information used to control the content distributed to and from each frame" such as data about each user and the preferences associated with that user." *See, e.g.*, '573 Patent at 19:6-15. Web servers serving web pages would not include these features described in the Patents-in-Suit.

3210. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98, Kikinis, Criss, or Kottapurath, does not anticipate or render obvious this claim limitation.

ii. Claim [1.e] a memory comprising a unique identifier for said apparatus;

3211. For this claim limitation, Dr. Johnson refers back to section XI.D.2.a (6). This section refers to claim 1e "and a unique identifier for said digital display apparatus,"

3212. Dr. Johnson points to the user ID in Windows 98. Johnson ¶1820. However, as has been discussed elsewhere in this report, the user ID uniquely identifies a user, not the device. In fact, the same user can logon to the network from other devices, using the user ID. And in fact, several different users can logon to the same device each using a different user ID.

3213. Dr. Johnson then turns his attention to digital certificates stating "IE4 can use a personal certificate stored in memory of the computer to access secured web pages automatically." Johnson ¶1821. Again Dr. Johnson is overlooking the fact that this is a personal certificate, it identifies the person, not the device.

3214. Dr. Johnson then states: "Furthermore, upon setting up Win98, the user is asked to "enter a name and description for [the user's] computer." Getting Started Microsoft Windows 98 at 32. "If [the user's] computer is connected to a network, this information identifies [the user's] computer to other users." Johnson ¶1824.

3215. Dr. Johnson also states: "Furthermore, the hard drive of the Stylistic Tablet running Win98 has a 'serial number' that could be displayed using an Internal Command 'VOL.' *Using Windows 98* at 1022-23. Such a unique identifier could also be used for device identification purposes." Johnson ¶1826. This ignores the purpose of the unique identifier in the claim limitations. That identifier must actually be used to identify the device as specified in the patent. For example, "Once the session is established, frame device 200 transmits a unique identifier (e.g. user/frameID). Package server 271 responds by prompting frame device 200 for password

information, which the frame then transmits." '562 Patent at 18:10-13. Dr. Johnson does not even suggest that the hard drive serial number is ever transmitted.

3216. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Kikinis, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

iii. Claim [1.f] computer readable instructions different from said content for controlling the operation of said apparatus, and a version identifier for said computer readable instructions,

3217. For this claim limitation, Dr. Johnson points to the Stylistic Tablet running Windows 98. Johnson ¶1959. Dr. Johnson first refers to XI.D.4.a(1). However, that section of Dr. Johnson's report is referencing the claim limitation of: "An apparatus for displaying content comprising image data received from a server system via a communications network on a display screen comprising." Dr. Johnson then refers to section XI.D.2.a(7). Section XI.D.2a(7) of Dr. Johnson's report refers to the claim limitation "and a current version of onboard software."

3218. However, for both of those claim limitations (discussed in sections XI.D.4.a(1) and XI.D.2a(7) of Dr. Johnson's report), Dr. Johnson points to the Windows 98 operating system. A POSITA would recognize that this is not "computer readable instructions ***different*** from said content for controlling the operation of said apparatus" (emphasis added). In fact, Dr. Johnson does not even claim, much less demonstrate, that it is different parts of Windows 98 accomplishing these functions.

3219. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98, Kikinis, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

iv. Claim [1.g] said computer readable instructions comprising instructions for causing said apparatus to perform the steps of: upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network;

3220. Dr. Johnson asserts that Win98 discloses that Internet Explorer's "connection manager" can "automatically establish an Internet connection whenever [a user] attempt[s] to access a web page." Johnson ¶1960. However, Dr. Johnson does not point to anything that even suggests this occurs "upon connection to a power source and a communications source." Rather, it is quite clear from the very sections of *Using Windows 98* that Dr. Johnson cites, that connecting to the internet is a manual process, and, in fact, the Stylistic Tablet could be connected to both a power source and a communication source, and never initiate internet or web communications. Dr. Johnson's merely cites the following from Win98: "To set up Connection Manager, open the Internet Options dialog box and click the Connection tab. Choose the option labeled Connect to the Internet Using a Modem, and then click the settings button."

3221. Dr. Johnson then states: "To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious for the computer readable instructions to cause said display device, upon connection to a power source and a communications source, to automatically initiate a communications session with said server system." Johnson ¶1961.

3222. This appears to be a tacit admission that the Stylistic Tablet running Windows 98 does not disclose this claim limitation. On that point, I agree with Dr. Johnson.

3223. Apparently recognizing that Stylistic Tablet running Win98 is deficient, Dr. Johnson attempts to combine, in the alternative, each of Criss, Kottapurath, and Kikinis with the Stylistic Tablet running Win98. Johnson ¶¶1962-65.

3224. Dr. Johnson first discusses Criss. Johnson ¶1962. As has been discussed previously in this report, Criss is in an entirely different field. The USPTO primary classification for Criss is

455/418. Class 455 is Telecommunications. Subclass 418 is programming control. This is in an entirely different field than the Stylistic Tablet and Win98, which are a personal computing device and an operating system, respectively. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). And again, a review of undergraduate courses in computer science at Rice University,[276] where Dr. Johnson is a professor reveals not a single course in telecommunications. Thus, a POSITA, as defined by Dr. Johnson, who had graduated from the very university Dr. Johnson is a professor at, would not have been skilled in the primary field of Criss. A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

3225. Dr. Johnson only provides a partial quotation from Criss. Johnson ¶1962 (citing Criss at 7:22-28). The full quote from Criss cited by Dr. Johnson is "When a mobile terminal 36 within the system initially powers up (via an on/off Switch for example) or is reset, the mobile terminal 36 goes through an initialization, or boot-up routine. Such routine includes communicating with the host computer 30 via a selected base station 26 in order that the host computer 30 provides the mobile terminal 36 with its internet protocol (IP) address as is conventional." Criss at 7:22-28. A POSITA would immediately see that Criss is not even describing a computer, like the Stylistic device, but rather a mobile terminal that in turn needs to communicate with a host computer via a base station.

276 https://courses.rice.edu/courses/!SWKSCAT.cat?p_acyr_code=2021&p_action=CATASRCH&p_onebar=&p_mode=AND&p_subj_cd=COMP&p_subj=COMP&p_dept=COMP&p_school=EN&p_df=&p_submit=

3226. Base stations are integral to the operation of Criss. This is shown throughout Criss, including in figure 1 shown here:

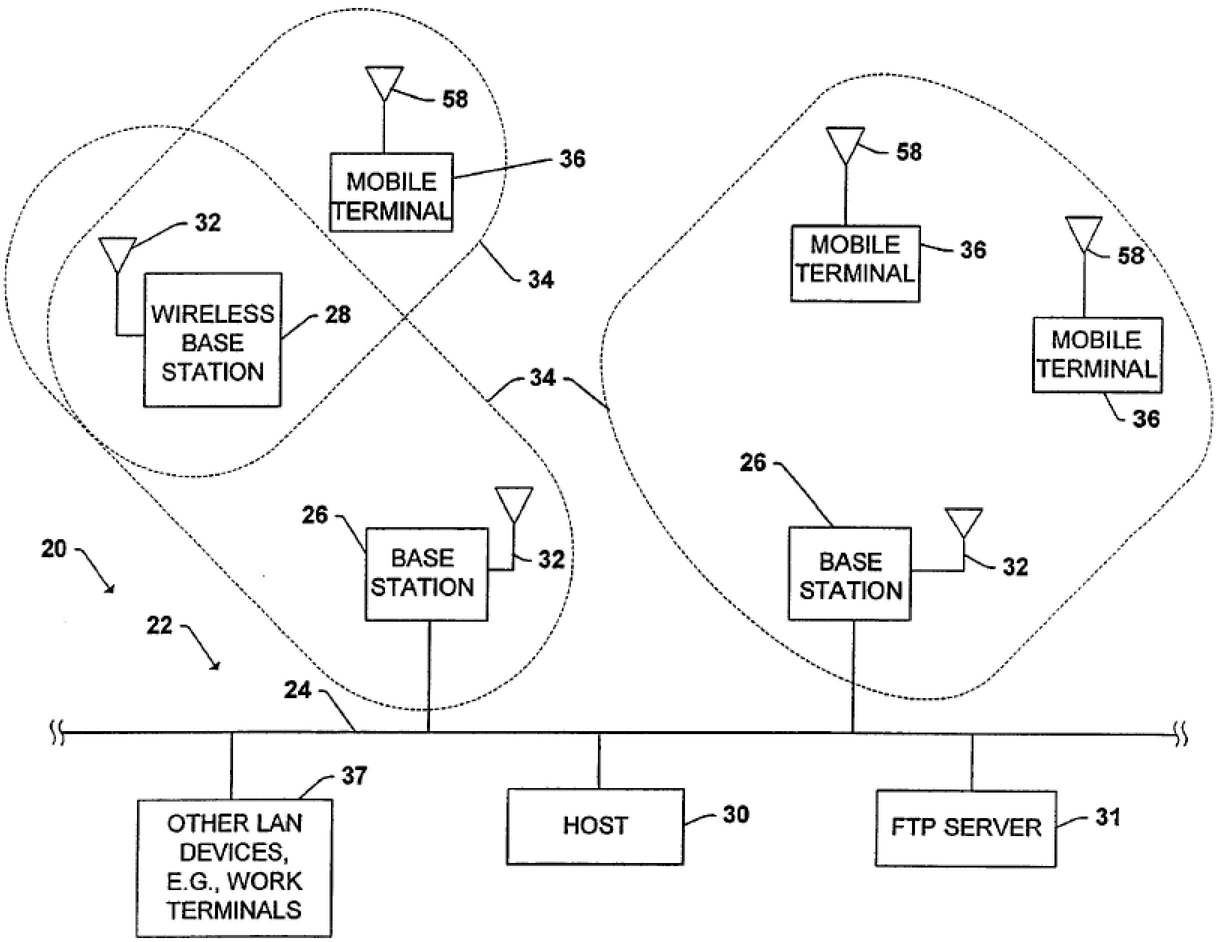


Fig. 1

3227. Criss describes a process in which a mobile device communicates with a host computer 30 that "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" A host computer

30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

3228. Criss thus discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the display device simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." '573 Patent at 5:11-23 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server. Therefore, even if Criss were somehow combined with Stylistic Tablet running Win98, this combination would not reach the claims of the Patents-in-Suit.

3229. Also, Dr. Johnson does not discuss how the extensive infrastructure needed for Criss to work would be fused with the Stylistic Tablet running Windows 98. In fact, Dr. Johnson does not even mention how these base stations, that are required in Criss to communicate, would be incorporated.

3230. Dr. Johnson then turns his attention to Kottapurath, asserting that Kottapurath discloses that a "mechanism for installing and upgrading an operating system or application program" and that the "method begins when the operator of the local computer 12 turns on or reboots or otherwise re-starts the computer." Johnson ¶1963 (quoting Kottapurath at 3:38-40). However, Dr. Johnson ignores the fact that Kottapurath requires an interrogation code segment on the device and an identifier program on the server. It is not even clear that the interrogation code

of Kottapurath could run on a Stylistic Tablet running Windows 98. It should be noted that Kottapurath never mentions Windows, but only MS DOS or UNIX. Kottapurath at 3:14-20.

3231. As was previously discussed in this report, Kottapurath has extensive requirements that would have required substantial work and undue experimentation to combine with the other prior art citations. First, the device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

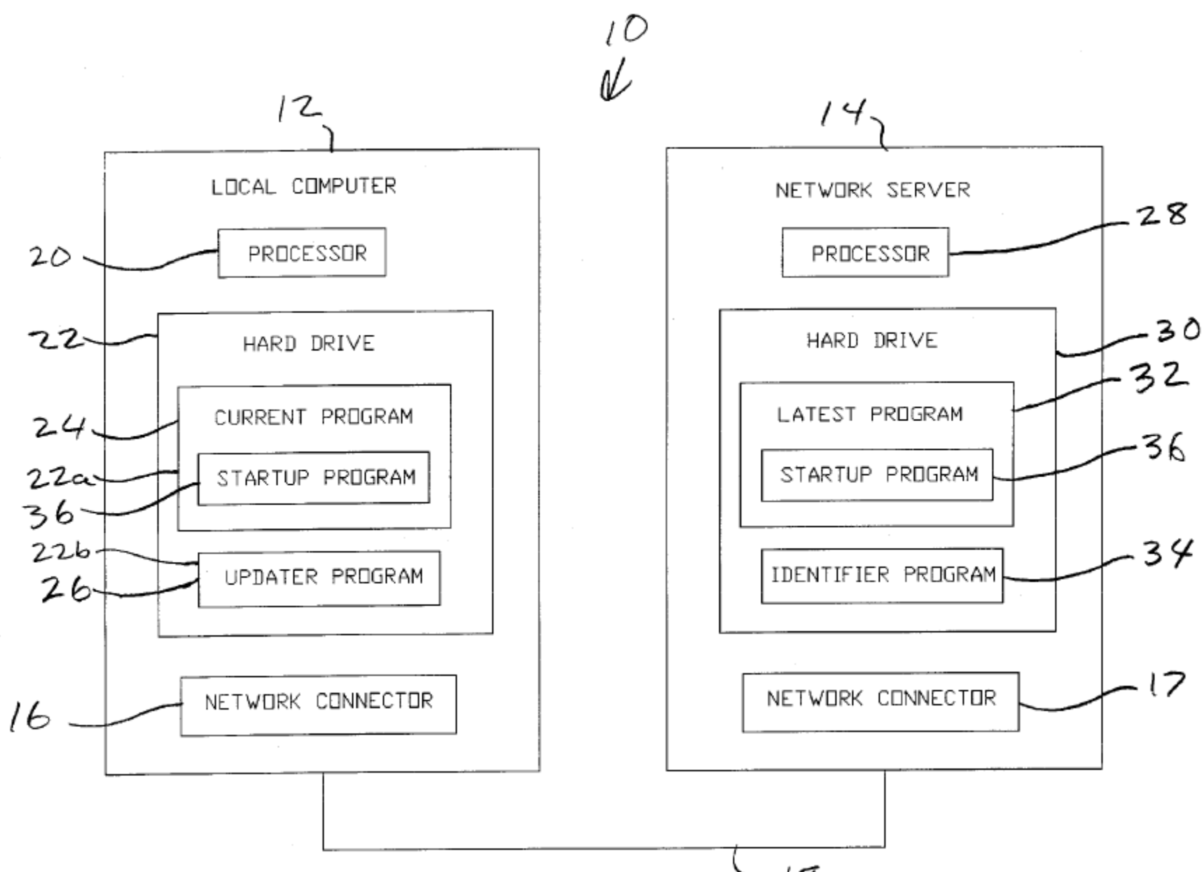


Fig. 1

3232. A POISTA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how

to combine these elements with Stylistic Tablet or Win98. Figure 3 of Kottapurath shows the process:

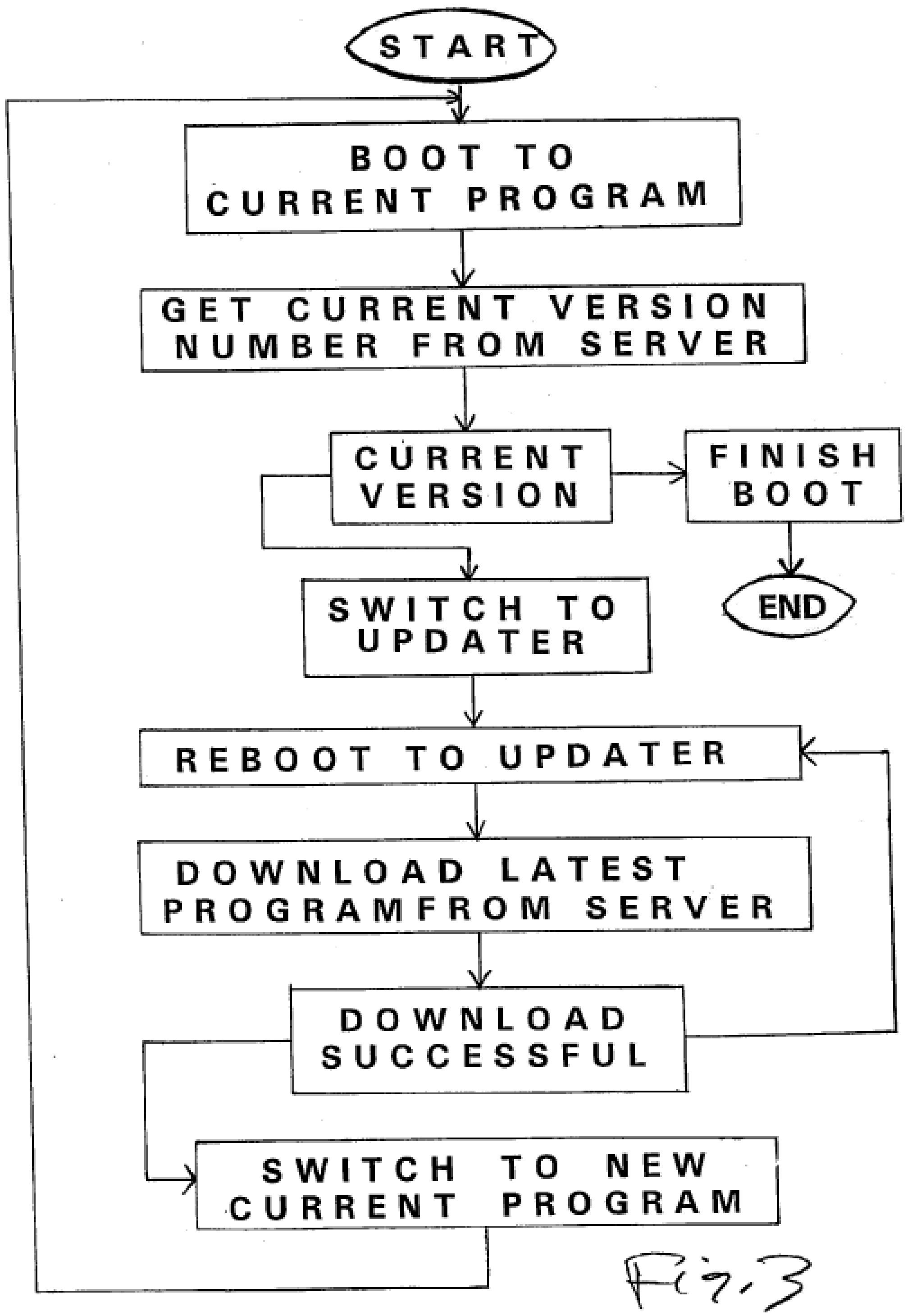


Fig. 3

3233. Dr. Johnson then turns his attention to Kikinis, asserting that:

> Kikinis discloses a service, including an apparatus and software, "that enables users who have purchased an Internet appliance such as a WEB phone, for example, to obtain third-party assistance in setting-up and configuring the device for successful operation." Kikinis at 4:22-27. "Such Internet appliances include any device that is used for accessing and operating on the Internet, or other types of switch-packet networks that may stand alone or be linked to the Internet. Examples are WEB phones, WEB TV's, Palm-top computers, Internet capable cell phones, Laptop computers, and so on." Id. at 4:43-48. When "a user plugs in a specific Internet appliance . . . and insures that all hardware and connections are correct . . . the user calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased. The appliance is then connected to server 21." Id. at 8:22-29. The server then communicates with the Internet appliance to perform set-up operations, which may include software updates. Id. at 8:41-60, 6:26-35. A POSITA would have recognized that Kikinis's service involves a device automatically initiating a communications session with a server system (e.g., the server) upon connection to a power source and communications source.

Johnson ¶1964.

3234. As shown above, Kikinis discloses that a device can call a 1-800 number to get assistance, but only when a user performs the call, or when a user gives permission for the device to perform the call. Kikinis thus does not disclose an automatic process. Dr. Johnson, recognizing this, essentially says that it would be "obvious that obtaining the user's permission could be omitted." Johnson ¶915. There is no suggestion in Kikinis to omit how Kikinis is disclosed to operate, and Dr. Johnson appears to only state it would be obvious to do so based on hindsight and a need to try to reach this claim element, neither of which is a proper motivation to modify Kikinis.

3235. In other words, Dr. Johnson asserts this step in Kikinis could be omitted so that one could view Kikinis as meeting a particular claim limitation of the '656 Patent. Dr. Johnson then cites a portion of Kikinis in support of his assertions: "What is clearly needed is a system including apparatus that allows a one-touch transparent set-up and configuration process that does not require

much more than a user ID and account number or credit card number to successfully configure an Internet appliance." Kikinis at 3:6-10.

3236. However, that portion of Kikinis belies Dr. Johnson's position. A POSITA would readily see that Kikinis is envisioning a user interaction, including a user's touch with a user ID and either an account number or credit card number. This is not automatic. In fact, Kikinis requires the user ID or credit card number to function, thus demonstrating that one could not alter Kikinis to perform this step automatically. However, Dr. Johnson does not point to anything in Kikinis that involves updating the operating system automatically or otherwise. Furthermore, Dr. Johnson admits that Kikinis does not perform automatically, but rather requires user permission. Dr. Johnson asserts it would have been obvious to make this automatic, however that ignores that Kikinis envisions using the telephone network via dial up "In Step 37, a user plugs in a specific Internet appliance such as appliance 15 of FIG. 1, and insures that all hardware and connections are correct. In Step 39, the user calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased." Kikinis at 8:22-28.

3237. Automatically connecting via dial up would cause the users phone system to be automatically engaged, even if the user was currently using the phone. A POSITA would realize that such an automatic process is contrary to Kikinis.

3238. Dr. Johnson then states:

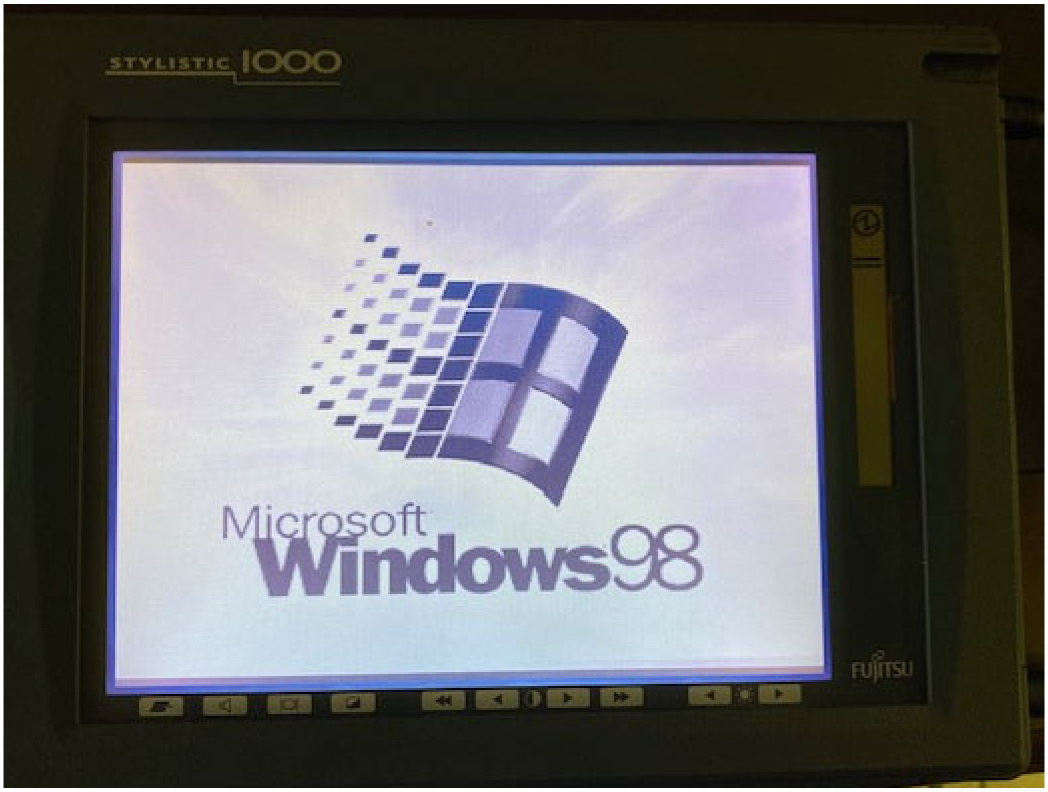
> A POSITA would have been motivated to incorporate the teachings of any one or more of Criss, Kottapurath, and/or Kikinis with the combination of Stylistic Tablet and Win98. Win98 is software that strives to "maintain[] itself" "all without requiring any work from" the user. *Using Windows 98* at 13. Criss, Kottapurath, and/or Kikinis each further this goal by providing means for the software to maintain itself by downloading updates or other data from a server via a network without requiring user intervention. See, e.g., Criss at 2:41-45 ("In view of the aforementioned shortcomings associated with existing systems and techniques for

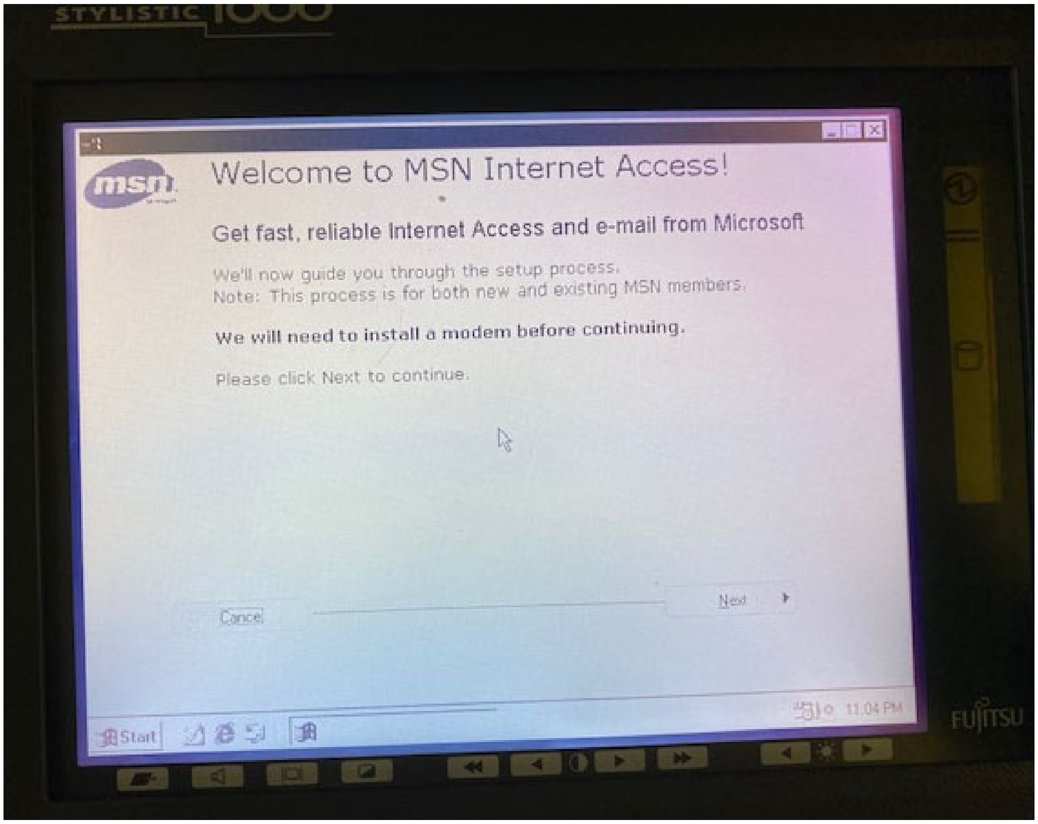
> upgrading mobile device operating software, there is a strong need in the art for a system and method which does not require significant down time or service costs."); Kottapurath at 1:29-43 ("It is desirable to have a mechanism whereby this process can take place automatically such that new versions of the software when installed on the server will migrate to the local computers on the network without user intervention. . . . The present invention overcomes the drawbacks of the prior art by providing a method and system by which a program such as an operating system which is stored on a local computer can be automatically updated from a network server upon startup of the local computer."); Kikinis at 4:3-7 ("The present invention in various embodiments provides for the first time a system whereby Internet appliances may be quickly and easily configured for use without effort or trouble on the part of a user, and by doing so, significantly expands the market and usability of such devices."). Such combinations are a combination of prior art elements according to known methods to yield predictable results as well as use of a known technique to improve a similar device, e.g., a computing device, in the same way.

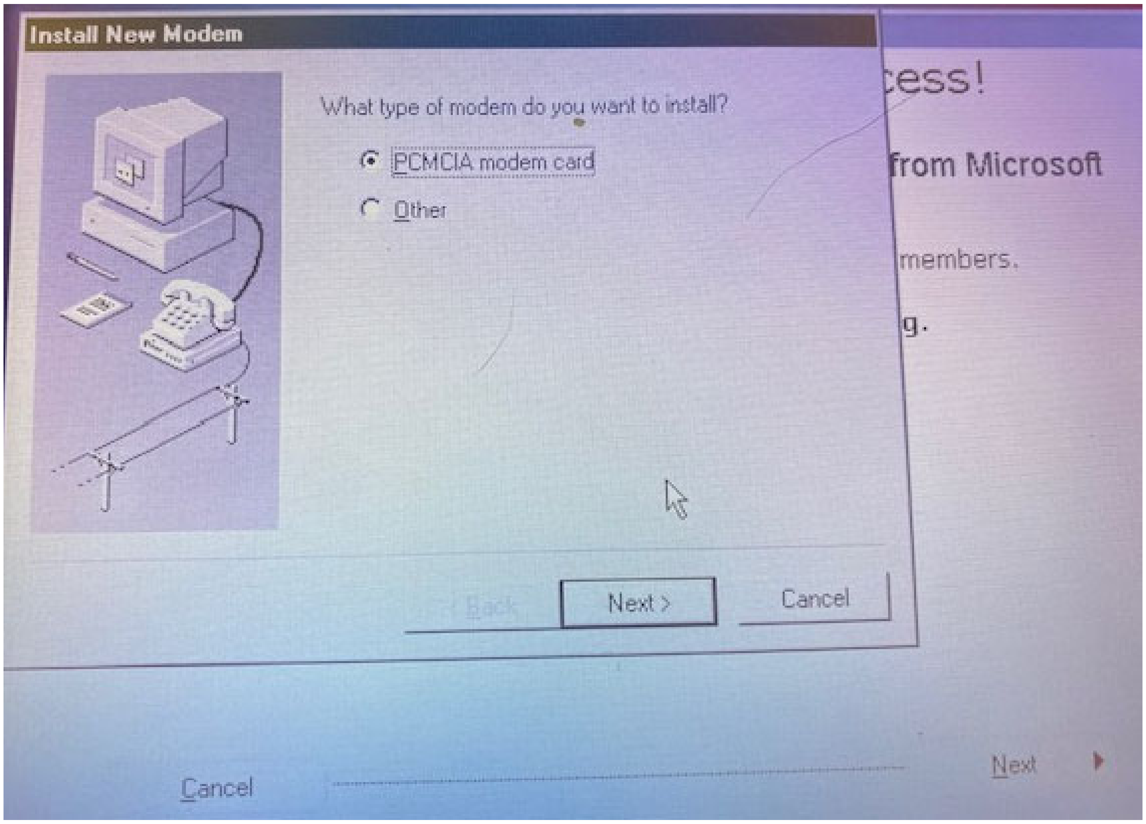
Johnson ¶1965.

3239. Dr. Johnson's statements lack any real reasons why a POSITA would modify the Stylistic Tablet, even assuming it is running Win98, specifically, and instead appears to assert that one *could* theoretically modify it somehow to connect to a server and obtain software updates. Dr. Johnson does not describe why a POSITA would be motivated to modify the Stylistic Tablet running Win98 other than a general argument that "automatic" is desirable. Dr. Johnson thus does not provide adequate motivation to combine and is simply based on hindsight reasoning. Also, as has been pointed out, these references are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

3240. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. Screenshots are provided here:


STYLISTIC 1000
Microsoft
Windows98
FUJITSU


STYLISTIC
msn
Welcome to MSN Internet Access!
Get fast, reliable Internet Access and e-mail from Microsoft
We'll now guide you through the setup process.
Note: This process is for both new and existing MSN members.
We will need to install a modem before continuing.
Please click Next to continue.
Cancel
Next
Start
11:04 PM
FUJITSU



3241. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet.

3242. The Fujitsu Stylistic Tablet has no mechanism to automatically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem. PCMCIA functionality is found in 1-3 of the Stylistic Tablet 1000 Technical Reference Guide. Programmable System Functions are found at 4-1. The Fujitsu Tablet does support Infra-Red, however that only works with direct line of site.

3243. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. Even if one were to use the Stylistic 1000 RF, the maximum connection speed was 1.6 megabits per second. This is inadequate for the items Dr. Johnson proposes using it for such as subscribing to web pages.

3244. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites the Using Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[277]

3245. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98, Kikinis, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

v. Claim [1.h] sending by said apparatus said unique identifier to said server system;

3246. For this claim limitation Dr. Johnson refers to XI.D.2.b(1) of his report. Johnson ¶1966. In that section, Dr. Johnson relies on a user ID disclosed in Win98. However, that is not a unique identifier for the device, it is a unique identifier for the user.

3247. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Kikinis, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

vi. Claim [1.i] sending by said apparatus said version identifier to said server system;

3248. Dr. Johnson relies on the Windows update process of Win98 for claim element. Johnson ¶¶1967-71. However, that ignores the fact that the Windows update process is a manual, user-initiated, process.

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[277] Using Windows 98 Platinum Edition, page 968.

3249. The book *Using Windows 98 Platinum Edition*[278] has a section on updating Windows 98. That section is three pages long (pages 292 to 294) with multiple steps. These steps must be executed by a user:

a. Click Start and click the Windows Update icon. Internet Explorer comes up automatically and attempts to connect to Microsoft Windows Update site shown in figure 16.1.

b. Click on Update Wizard. A registration wizard pops up if this is the first time you have used the Update Wizard (see figure 16.2). You must fill out the registration to continue. Part of the registration is to upload your configuration files to Microsoft. You can deselect a check box, so this doesn't happen if you want to.

c. The Update Wizard web page contains two options. Update and Restore. Click Update to scan the internet for updated system files. A new Internet Explorer window pops up, as shown in figure 16.3. The update Wizard loads necessary components into your system and then scans the database for updated drivers.

d. As updates are found the wizard refreshes the screen and the list of files available for update. Select a file in the list on the left to see its description as well as its size, and approximate download time on the right side of the main windows.

e. Click on Install to install the file. Only one file can be installed at a time, and your computer may need to be restarted after a file is installed. Let the computer restart, if necessary, before downloading a second update in order to verify that it is still working properly.

[278] Bott, E., & Person, R. (1998). *Using Microsoft Windows 98 with Cdrom*. Que Corp.

3250. The section goes on to discuss the various problems that can arise when updating Windows 98. But even if everything goes smoothly, an operating system consists of numerous individual files and applications. Windows 98 required a user to individually download and install these one at a time, with potentially numerous pauses to restart the system.

3251. Dr. Johnson states: "To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious for the computer readable instructions to cause the apparatus to send said version identifier to said server system." Johnson ¶1969. A POSITA would realize that given limited bandwidth (many users using dial up connections) and the lengthy and manual process of updating, that Windows 98 would not perform well if the apparatus sent a version identifier without user involvement/initiation.

3252. Furthermore, the "said server system" clearly refers to an antecedent in the claim. That antecedent is clearly described at the beginning of claim 1 "An apparatus for displaying content comprising image data received from a server system via a communications network." The Windows update server does not provide image data, and thus cannot be the "said server system" described in this claim limitation.

3253. Dr. Johnson then moves on to Criss. As has been discussed previously in this report, a POSITA would not have combined Criss with the Stylistic Tablet, nor any of the other asserted prior art.

3254. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally

relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Telecommunications, the primary field of Criss. Nor does Dr. Johnson's description of a POSITA indicate any skill in mobile devices, which are mentioned 129 times in Criss. It is more likely than not that a POSITA as described by Dr. Johnson would not be able to combine Criss with anything.

3255. Criss also requires an extensive infrastructure. "When a mobile terminal 36 within the system initially powers up (via an on/off Switch for example) or is reset, the mobile terminal 36 goes through an initialization, or boot-up routine. Such routine includes communicating with the host computer 30 via a selected base station 26 in order that the host computer 30 provides the mobile terminal 36 with its internet protocol (IP) address as is conventional." Criss at 7:22-28.

3256. Base stations are integral to Criss working. This is shown throughout Criss, including in figure 1 shown here:

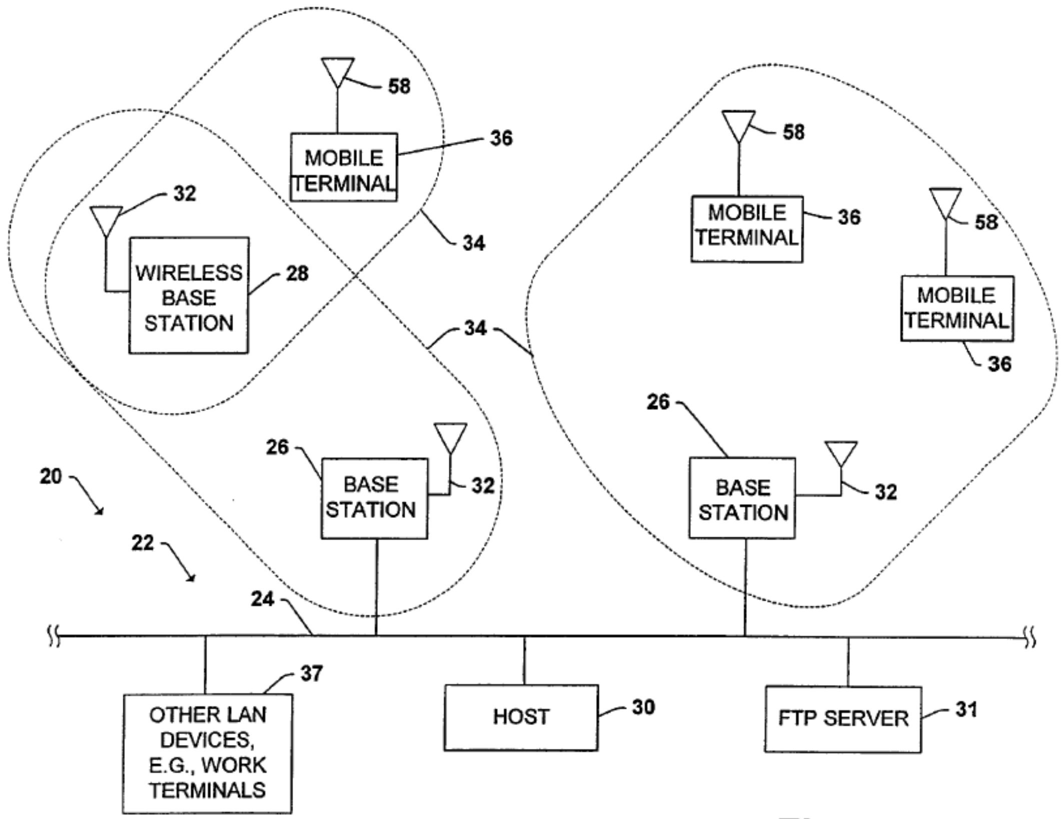

Fig. 1

3257. Criss can only communicate due to this extensive infrastructure. A POSITA would recognize that this requires the base stations disclosed in Criss. Dr. Johnson does not adequately explain how Criss could be combined with Stylistic Tablet and Win98.

3258. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98, Kikinis, Criss, or Kottapurath does not anticipate or render obvious this claim limitation.

vii. Claim [1.j] prompting by said apparatus a user of said apparatus to create an account at said server system;

3259. For this claim limitation, Dr. Johnson refers back to section XI.D.2.f.(1) of his report, which discusses claim 6 of the ’930 Patent. Johnson ¶1972. For that claim limitation, Dr. Johnson relies on combining Stylistic Tablet, Windows 98, and Hoyle. However, this claim

limitation is not merely prompting to create an account, but rather an "account at said server system." Dr. Johnson does not even identify what server the account is being created on in his proposed combination.

3260. Dr. Johnson asserts that when a user subscribes to an account, the user needs a password. But that does not reveal any prompting of said user to create an account. In fact, that assumes a pre-existing account.

3261. Further, Dr. Johnson states:

> To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious that the digital display apparatus is configured to display an account initialization message. For example, Hoyle discloses that a targeted advertisement display system may be configured to display a message asking if a new user would like to set up a new account. *See, e.g.*, Hoyle at 26:49-27:13 ("As shown in FIG. 9, upon execution of the client software application 10, a login and password input box is displayed. This is shown at block 148. Once the user has entered a login name, a check is made at block 150 to determine whether the user name is new. . . . If, back at block 150, the login name is determined to be new, the user can be queried as to whether they would like to set up a new account, as indicated at block 158. . . . If a new account is desired, flow moves to block 160 where the application requests various demographic data, which can be the same data requested of the user who originally downloaded the application from server 22.").

Johnson ¶1854.

3262. Dr. Johnson thus acknowledges that Stylistic Tablet running Win98 does not disclose this claim limitation. I agree with Dr. Johnson on this point. Then, Dr. Johnson goes on to point to a login and password screen displayed in Hoyle asserting that this login screen discloses this claim limitation. However, a POSITA would readily understand that a login screen is not initializing an account, but rather requires an existing account in order to function. Even if one were to argue that Hoyle provides one the opportunity to setup a new account from this login, Dr. Johnson has not explained ***why*** one would combine Hoyle with the alleged combination of Stylistic Tablet and Win98.

3263. Dr. Johnson attempts to provide some rationale that Win98's description of subscribing to password-protected websites lends itself to also allowing users to create accounts and thus display account initialization messages. Johnson ¶1856. But this brief statement from Dr. Johnson does not actually address why a POSITA would want to make such a combination or how a POSITA would accomplish this. The subscription feature in Win98 appears to allow for a password to be automatically used by IE4 in order to log in and receive content from the website, but Win98 is clear that an existing account is needed, and that, if the credentials provided for the existing account are incorrect, *Using Windows 98* advises users to separately and manually go and ensure they have an account set up, as well as the proper credentials.[279] In fact, the login information window shown on page 682 of *Using Windows 98* is simply for the user to provide credentials to the subscription service to use when attempting to get website content from password-protected websites, and thus would not have the functionality to allow users to create an account. This would require some kind of back end method to set up new accounts across a vast array of different websites using the subscription service application, which would be neither simple nor predictable. Dr. Johnson also does not address how such a combination would have improved Windows 98, the Stylistic Tablet, or Hoyle.

3264. Dr. Johnson states: "A POSITA would have found it obvious to provide in Win98 a new account initialization message like that of Hoyle when a user subscribes to a new password-protected website in order, for example, to prompt the user to create a new account." Johnson ¶1857.

3265. However, this assertion ignores the nature of websites one can log into. Browsers, including IE 4 with Windows 98 allow one to navigate to a website, and then the web server takes

[279] Using Windows 98, 691-692.

over. One could not combine Hoyle with Windows 98, one would have to combine Hoyle with the web server. Put another way, the web browser cannot dictate to the web server how accounts are setup. Dr. Johnson's combination, even if attempted, simply would not work.

3266. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 and Hoyle does not anticipate or render obvious this claim limitation.

viii. Claim [1.k] receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system; [1.l] updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions;

3267. For these elements, Dr. Johnson refers back to his analysis in Sections XI.D.2.a.(15) and XI.D.2.a.(16) of his report regarding software updates with respect to claim 1 of the '930 Patent. Johnson ¶1014-15.

3268. For this claim limitation, Dr. Johnson also states: "See above (e.g., Section XI.D.1.d.(12))." Johnson ¶1840. That section of Dr. Johnson's report begins on paragraph 1769. Dr. Johnson relines on the Windows Update Wizard. As has been discussed previously in this report, the Stylistic Tablet, even combined with Win98, is not configured to obtain an update on its own. A user must manually update the operating system. The book *Using Windows 98 Platinum Edition*[280] has a section on updating Windows 98. That section is three pages long (pages 292 to 294) with multiple steps. These steps must be executed by a user:

A. Click Start and click the Windows Update icon. Internet Explorer comes up automatically and attempts to connect to Microsoft Windows Update site shown in figure 16.1.

[280] Bott, E., & Person, R. (1998). *Using Microsoft Windows 98 with Cdrom*. Que Corp.

B. Click on Update Wizard. A registration wizard pops up if this is the first time you have used the Update Wizard (see figure 16.2). You must fill out the registration to continue. Part of the registration is to upload your configuration files to Microsoft. You can deselect a check box, so this doesn't happen if you want to.

C. The Update Wizard web page contains two options. Update and Restore. Click Update to scan the internet for updated system files. A new Internet Explorer window pops up, as shown in figure 16.3. The update Wizard loads necessary components into your system and then scans the database for updated drivers.

D. As updates are found the wizard refreshes the screen and the list of files available for update. Select a file in the list on the left to see its description as well as its size, and approximate download time on the right side of the main windows.

E. Click on Install to install the file. Only one file can be installed at a time, and your computer may need to be restarted after a file is installed. Let the computer restart if necessary, before downloading a second update in order to verify that it is still working properly.

3269. The section goes on to discuss the various problems that can arise when updating Windows 98. But even if everything goes smoothly, an operating system consists of numerous individual files and applications. Windows 98 required a user to individually download and install these one at a time, with potentially numerous pauses to restart the system.

3270. In fact, Dr. Johnson's report goes through the process with screenshots beginning on page 567 of his report and continuing through page 571. This is not something the device is configured to do. Rather it is a lengthy and manual process the user must do.

3271. I note that again, Dr. Johnson does not conclude this section by even asserting that he believes this claim limitation is rendered obvious, nor by what he might believe it is rendered obvious (i.e., Windows 98 alone, Windows 98 combined with something, etc.).

3272. This is further exacerbated by the fact that a user would need to first add a PCMCIA modem to the Fujitsu Stylistic Tablet, then manually dial in to a network. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

3273. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet.

3274. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

ix. Claim [1.m] receiving by said apparatus updated content from said server system;

3275. For this claim limitation, Dr. Johnson refers back to sections XI.D.1.a.(9) and XI.D.1.b(11). In section XI.D.1.a(9) (concerning claim 1 of the ’573 Patent), Dr. Johnson states: “To the extent not explicitly disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious that said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data.” Johnson ¶1717. In section XI.D.1.b(11) (concerning claim 2 of the ’573 Patent), Dr. Johnson states: “To the extent not explicitly disclosed

by Stylistic Tablet running Win98, a POSITA would have found it obvious that said at least one server system is configured to periodically relay said image data and said preferences to said at least one frame device when said at least one frame device automatically issues a request for said image data." Johnson ¶1717.

3276. First, I note that the claim language here is different than in the '573 Patent, but for purposes of responding to Dr. Johnson, I again offer the following.

3277. I also note that this appears to be a tacit admission that the Stylistic Tablet running Windows 98 does not disclose this limitation, and in that respect I agree with Dr. Johnson. I also reiterate that the Stylistic Tablet was not sold with Windows 98, but rather Windows 95.

3278. Dr. Johnson again relies on the subscription tool of IE4 that he alleges "automatically directs the computer to send requests to update subscribed web pages," and the "Active Channel" feature that he alleges "allows Windows end-users to subscribe to pre-packaged web contents put together by a webmaster." Johnson ¶1745-47. This is not image data. Furthermore, this does not occur due to a display device automatically initiating a connection. Quite the contrary, the user must take specific steps to subscribe. In fact, Dr. Johnson cites the *Using Windows 98* book: "The dialog box allows a user to 'create a custom schedule, using a dizzying variety of options.'" Johnson ¶1719 (quoting *Using Windows 98* at 689-90).

3279. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 technical reference guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card or network card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98. Screenshots are provided here:

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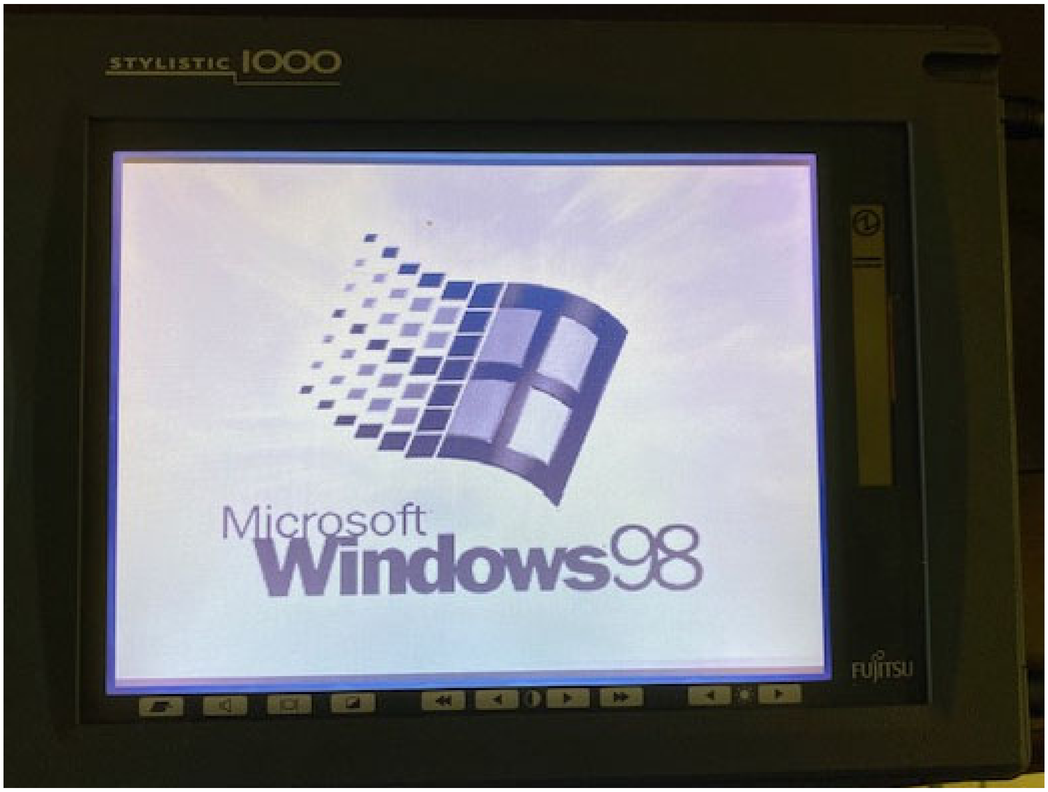

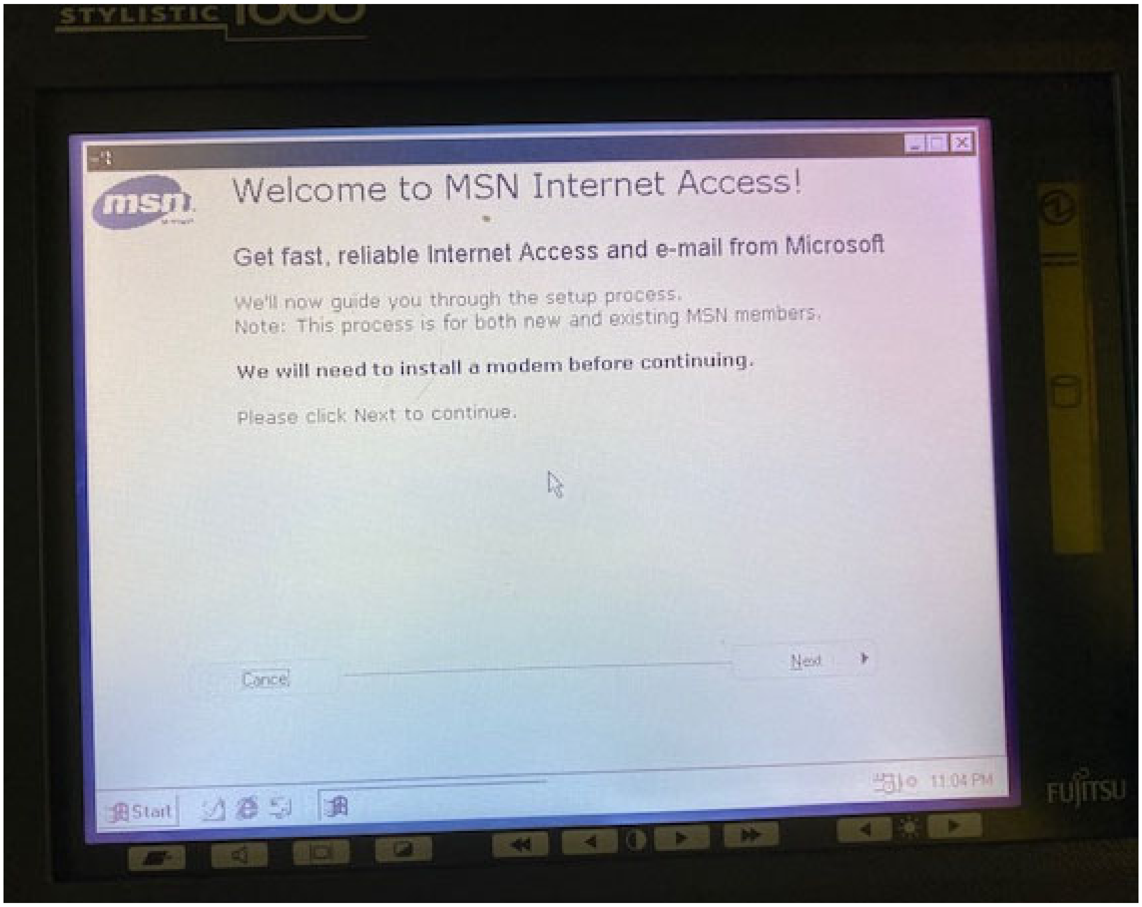

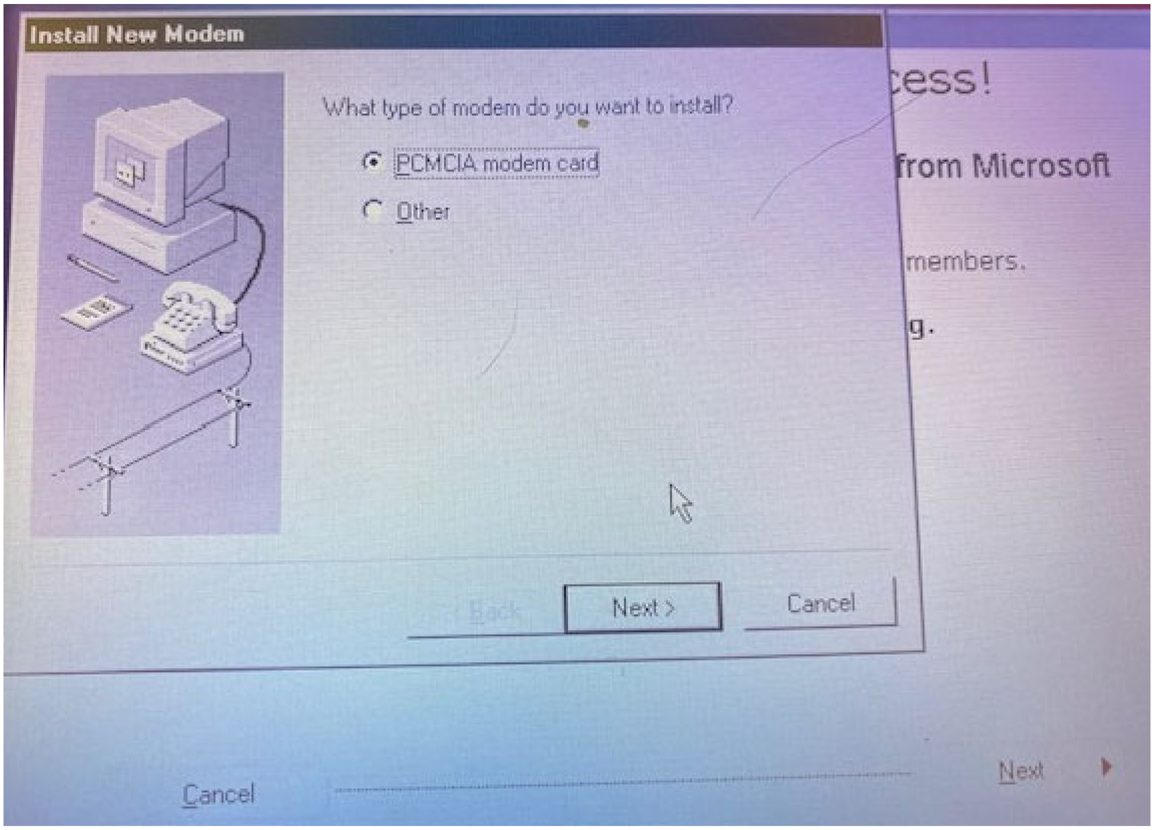

3280. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet. A POSITA would understand that automatically initiating communications is not available on the Stylistic Tablet. PCMCIA functionality is found in 1-3 of the Stylistic Tablet 1000 Technical Reference Guide. Programmable System Functions are found at 4-1. The Fujitsu Tablet does support Infra Red, however that only works with direct line of site.

3281. I also note that Dr. Johnson does not demonstrate the Fujitsu Stylistic Tablet actually subscribing to web pages or active channels. Instead, he cites the Using Windows 98 book and assumes that this would work the same way on the Fujitsu Stylistic Tablet. And, as was discussed earlier in this report, the book that Dr. Johnson relies on explicitly recommends against

installing Windows 98 on a device with the limited resources of the Stylistic Tablet, stating that it "should be considered for only the most basic operations."[281]

3282. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

x. Claim [1.n] displaying by said apparatus said updated content on said display screen.

3283. Dr. Johnson points to "Active Desktop" feature of Win98 again for this claim limitations. As has been discussed previously in this report, HTML is a document that may or may not contain images.

3284. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

xi. Claim [4.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to receive location information of said apparatus from said server system.

3285. Dr. Johnson asserts that Stylistic Tablet running Windows 98 discloses a server using a phone number to determine location information of a user's device. Johnson ¶1979-80. This is a rather odd claim for Dr. Johnson to make, as most of his assertions assume an ongoing network connection, not a dial up connection. As has been shown throughout this report, with a dial up modem, many of Dr. Johnson's assertions regarding claim limitations are simply not possible.

3286. Then, Dr. Johnson points to the use of an area code to provide location. However, an area code is a very large area. As an example, my area code 214 covers parts of Dallas, Collin,

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[281] Using Windows 98 Platinum Edition, page 968.

Denton, Rockwall, Ellis, and Kaufman counties[282] and a population of 6,995,340 people.[283] A POSITA would immediately recognize this is not location information.

3287. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

xii. Claim [11.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to transmit metadata to said server system.

3288. As discussed previously, the items Dr. Johnson points to are not metadata. Johnson ¶1989-90. Metadata is "Data about data. For example, the title, subject, author, and size of a file constitute metadata about the file."[284] Dr. Johnson cites a portion of the '562 Patent description of metadata. However, in his citation he omits key portions. The full citation is given here, with the parts Dr. Johnson omitted, emphasized: "***A package may also contain metadata about frame device 200. For example,*** some or all of the information stored in flash memory and/or DRAM may be inserted into a metadata file. The metadata file may contain, for example, a unique frame identifier, a relative clock time, a lights on clock tick, a lights out clock tick, a connect time, connection information, slide show information, log information, name server information, image information an image display list, and error information. Other information utilized by the frame device and/or any of the server systems may also be placed into the metadata file. ***The package server 271 may also generate packages that contain content and formatting data (e.g., image and/or text data)***." '562 Patent at 17:60-18:5. A POSITA would immediately understand that the elements Dr. Johnson omitted are rather important. A POSITA would understand that "metadata"

[282] https://www.allareacodes.com/214

[283] https://www.zip-codes.com/area-code/area-code-214.asp

[284] Microsoft Computer Dictionary 5th Edition published 2002, page 336.

is ancillary information such as small diagnostic or settings related to the display device in the ’562 Patent.

3289. Specifically, Dr. Johnson asserts that “Win98 includes an ‘online extension’ feature called ‘Windows Update’ that ‘helps your computer operate better by providing a central location to find customized files and product enhancements,’” that “product enhancements include service packs, system files, device drivers, and new Windows 98 features,” and that:

> Once installed and connected to the Windows Update server, the feature “automatically compare[s] device drivers installed on your computer with a database of updated drivers on the server.” *Id*. “If any drivers are found to be newer than your current set, they are offered to you to install.” *Id*. In other words, “Windows Update scans your system, generates a list of items that can be updated, and then installs the files for the items you choose to update.” *Id*. A POSITA would have understood that when this online update feature “scans” the user’s system and then “generates a list of items that can be updated,” it necessarily transmits metadata (e.g., the information about the current device drivers installed on the user’s computer) to the online update server so that “[i]f any drivers are found to be newer than your current set, they are offered to you to install.”

Johnson ¶1990.

3290. As indicated above, Dr. Johnson only points to that Windows Update can install device drivers and, while doing so, generates a list of items that can be updated. But Dr. Johnson merely assumes that metadata is transmitted, without providing any evidence in Win98 that metadata is transmitted, or even any examples of metadata.

3291. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

xiii. Claim [16.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to transmit authentication information to said server system.

3292. Dr. Johnson asserts that the Stylistic Tablet running Windows 98 fulfills this requirement. Dr. Johnson simply refers to portions of *Using Windows 98* that refer to

authentication of websites generally. Johnson ¶¶1995-98. The portions of *Using Windows 98* cited by Dr. Johnson state:

- Authentication. When you connect to a website, how do you know who's really running that server? When you download and run a program, how do you know that it hasn't been tampered with or infected with a virus? When extremely sensitive information is involved, you may want to insist on secure connections guaranteed by digital certificates.
- Encryption. Certain types of data-usernames and passwords, credit card numbers, and confidential banking information, for example-are too sensitive to be sent "in the clear," where they can be read by anyone who can intercept the packets. For these transactions, only secure, encrypted connections are acceptable.
- Control over executable content. The Internet is filled with programs and add-ins that can expand the capabilities of your browser. Unfortunately, poorly written or malicious add-ins can carry viruses, corrupt valuable data, and even expose your network to unauthorized break-ins. On most networks, administrators try to limit the potential for damage by restricting the types of files that users can download and run.[285]

3293. Dr. Johnson also discusses that *Using Windows 98* describes using "Secure Sockets Layer (SSL) over HTTP" and "digital certificates that comply with the X.509 standard" when communicating with web servers. Johnson ¶1998 (quoting *Using Windows 98* at 670-71, 74334).

3294. I note that Dr. Johnson conflates the Internet Explorer browser reviewing a websites digital certificate for websites that offer such a certificate, with receiving authentication information from said server system. Also, I again emphasize here that SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices (e.g., devices other than powerful desktop computers).[286] The article explains, especially for implementing client-side SSL authentication of

[285] Using Windows 98, 654.

[286] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[287] Given those challenges still existed in 2004, Dr. Johnson's report is deficient also because he does not attempt to analyze or evaluate in any way how SSL or TLS might behave or perform on smaller device like the Stylistic Tablet.

3295. RFC 2246, which describes X.509 digital certificates, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38.

3296. Dr. Johnson does not address how the subscription services or "Active Channel" features allegedly provided by Windows 98 would use or be modified to use digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. The subscription services Dr. Johnson relies on receive content from websites, but there would be no way to force servers serving such website content to use digital certificates. For at least these reasons, Dr. Johnson's analysis is deficient.

3297. Further, Dr. Johnson ignores that network authentication only applies if one wishes to authenticate to a particular network. Windows 98 will allow the user to login locally and use the full functionality of Windows 98 without authenticating to any network.

[287] *Id.*

3298. The Fujitsu Stylistic Tablet is designed to work without any network or remote server. In fact, the only way one could connect to any network or server is to first purchase a separate PCMCIA modem, install that modem, then dial into a network whenever a connection is desired. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 Technical Reference Guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

3299. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet. The Fujitsu Stylistic Tablet has no mechanism to periodically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem. Furthermore, the Fujitsu Stylistic Tablet running Windows 98 does not require one to authenticate even locally. The system boots directly into Windows 98 without any authentication required.

3300. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

xiv. Claim [17.] The apparatus of claim 1 wherein said computer readable instructions comprise instructions for causing said apparatus to receive authentication information from said server system.

3301. For this claim limitation, Dr. Johnson again discusses, in general, authentication without actually showing how this claim limitation is met, as well as that *Using Windows 98* describes using “Secure Sockets Layer (SSL) over HTTP” and “digital certificates that comply with the X.509 standard” when communicating with web servers. Johnson ¶1999.

3302. Again, the portions of *Using Windows 98* cited by Dr. Johnson state:

- Authentication. When you connect to a website, how do you know who's really running that server? When you download and run a program, how do you know that it hasn't been tampered with or infected with a virus? When extremely sensitive information is involved, you may want to insist on secure connections guaranteed by digital certificates.

- Encryption. Certain types of data-usernames and passwords, credit card numbers, and confidential banking information, for example-are too sensitive to be sent "in the clear," where they can be read by anyone who can intercept the packets. For these transactions, only secure, encrypted connections are acceptable.

- Control over executable content. The Internet is filled with programs and add-ins that can expand the capabilities of your browser. Unfortunately, poorly written or malicious add-ins can carry viruses, corrupt valuable data, and even expose your network to unauthorized break-ins. On most networks, administrators try to limit the potential for damage by restricting the types of files that users can download and run.[288]

3303. Dr. Johnson also discusses that *Using Windows 98* describes using "Secure Sockets Layer (SSL) over HTTP" and "digital certificates that comply with the X.509 standard" when communicating with web servers. Johnson ¶1999 (quoting *Using Windows 98* at 670-71, 74334).

3304. I note that Dr. Johnson conflates the Internet Explorer browser reviewing a websites digital certificate for websites that offer such a certificate, with receiving authentication information from said server system. Also, I again emphasize here that SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices (e.g., devices other than powerful desktop computers).[289] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge,

[288] Using Windows 98, 654.

[289] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[290] Given those challenges still existed in 2004, Dr. Johnson's report is deficient also because he does not attempt to analyze or evaluate in any way how SSL or TLS might behave or perform on smaller device like the Stylistic Tablet.

3305. RFC 2246, which describes X.509 digital certificates, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38.

3306. Dr. Johnson does not address how the subscription services or "Active Channel" features allegedly provided by Windows 98 would use or be modified to use digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. The subscription services Dr. Johnson relies on receive content from websites, but there would be no way to force servers serving such website content to use digital certificates. For at least these reasons, Dr. Johnson's analysis is deficient.

3307. Further, Dr. Johnson ignores that network authentication only applies if one wishes to authenticate to a particular network. Windows 98 will allow the user to login locally and use the full functionality of Windows 98 without authenticating to any network.

3308. The Fujitsu Stylistic Tablet is designed to work without any network or remote server. In fact, the only way one could connect to any network or server is to first purchase a

[290] *Id.*

separate PCMCIA modem, install that modem, then dial into a network whenever a connection is desired. Throughout his report, Dr. Johnson conflates what Windows 98 can do with what the Fujitsu Stylistic Tablet can do. Regarding networking, a review of the Stylistic 1000 Technical Reference Guide shows no reference to any network card. The only possibility for networking is to add a modem such as a PCMCIA modem card. I also confirmed this by actually using a Fujitsu Stylistic 1000 running Windows 98.

3309. A POSITA would readily understand that a Stylistic Tablet running Windows 98 is limited not only by Windows 98, but by the Tablet itself. Functions that require an ongoing network connection would not be available to the Stylistic Tablet. The Fujitsu Stylistic Tablet has no mechanism to periodically connect to a network. The user must manually dial up when desired, and then only if the user purchases and installs a separate PCMCIA modem. Furthermore, the Fujitsu Stylistic Tablet running Windows 98 does not require one to authenticate even locally. The system boots directly into Windows 98 without any authentication required.

3310. For at least the reasons described in this section, Stylistic Tablet alone or in combination does not anticipate or render obvious this claim limitation.

xv. Claim [20.] The apparatus of claim 1 wherein said updated computer readable instructions comprise instructions for adding new functionality to said apparatus.

3311. I note that Dr. Johnson does not include Claim 20 in his summary of claims and combinations, Johnson ¶481, 2007 (stating "In my opinion, claims 1-4, 7-12, and 15-18 of the '562 patent are invalid in view of Stylistic Tablet in combination with Win98, and one of Criss, Kottapurath, or Kikinis."), but since he still discusses Claim 20, I also analyze Claim 20 here.

3312. Dr. Johnson asserts:

> Stylistic Tablet running Win98 discloses wherein said updated computer readable instructions comprise instructions for adding new functionality to said apparatus. For example, as discussed above, the "Active Channel" feature of Win98 allows

> Windows users to subscribe to pre-packaged web content put together by a website author or administrator, "just as a newspaper publisher assembles a daily paper." *Id*. at 692. A user subscribes to an Active Channel Website "by clicking a hyperlink to a Channel Definition Format (CDF) file, which contains subscription information about that channel." Windows 98 Resource Kit at 260. A POSITA would have understood that the updated Win98 comprises instructions (e.g., the codes of Active Channels) for adding new functionality (e.g., for adding new channels) to the display of the Stylistic Tablet.

Johnson ¶2002.

3313. Dr. Johnson also asserts:

> Win98 also includes another feature called "Active Desktop" that "enables [the user] to specify an HTML page as the desktop background, just as previous versions of Windows enabled [the user] to use a graphic image as wallpaper." *Using Windows 98* at 679. *Id*. at FIG. 33.1.
>
> . . .
>
> With Active Desktop enabled, the user can "add multiple pictures to the desktop and rearrange them as [the user] see[s] fit. [The user] can use saved image files, such as a family picture or a postcard of [the user's] favorite tropical resort." *Id.* at 682. A POSITA would have understood that the updated Win98 comprises instructions (e.g., the codes of Active Desktop) for adding new functionality (e.g., for adding new HTML pages or images) to the display of the Stylistic Tablet.

Johnson ¶2003.

3314. As shown above, Dr. Johnson asserts the "Active Channel" and "Active Desktop" features of Win98 provide "said updated computer readable instructions" that "comprise instructions for adding new functionality to said apparatus." However, Claim 20 refers to ***said*** updated computer readable instructions, first introduced in Claim 1 of the '562 Patent. For that element of Claim 1, Dr. Johnson referred to an "Update Wizard" of Win98 as allegedly providing updated computer readable instructions. See Section XIII.C.5.vii of this report. The "Active Channel," "Active Desktop," and "Update Wizard" features of Win98 are all separate features, and Dr. Johnson does not explain how the "Active Channel" and "Active Desktop" features of Win98 can provide "said updated computer readable instructions," when the "Update Wizard"

feature, as he alleges, supposedly provided the "updated computer readable instructions." Dr. Johnson is simply flip flopping between these features and does not adequately explain how they work together or how they meet the claim elements, which, in my opinion, they do not.

3315. For at least the reasons described in this section, Stylistic Tablet alone or in combination with Win98 does not anticipate or render obvious this claim limitation.

XIV. THE ASSERTED CLAIMS ARE NOT INVALID UNDER OBVIOUSNESS-TYPE DOUBLE PATENTING

3316. I understand that, to assert claims of a patent are invalid under Obviousness-Type Double Patenting (OTDP) based on a reference patent, the reference patent must be available as an OTDP reference. I understand Ceiva's position is that the '562 Patent should not be available as an OTDP reference against the '930 Patent because the '930 Patent both was filed before and issued before the '562 Patent and because, even though the '930 Patent expires after the '562 Patent, this was due to statutorily-granted patent term adjustment for the '930 Patent. However, since Dr. Johnson analyzed the '930 Patent with respect to the '562 Patent, I still offer my analysis below on these factual issues.

3317. I also understand that, even if a reference patent is available as an OTDP reference, the subject patent cannot be found invalid when the claims of the subject patent include one or more elements that are patentably distinct (non-obvious) from the claims of the reference patent. I also understand that, in general, the specification of the reference patent cannot be used to establish obviousness of the claims of the subject patent claims, but can only be used in limited circumstances for understanding the claims of the subject patent and the reference patent, such as to provide a definition for a claim term.

3318. Dr. Johnson is of the opinion that (1) "the asserted claims of the '930 Patent are invalid over claim 18 of the '573 Patent," Johnson ¶¶2086-78, (2) "the asserted claims of

the ’930 Patent are invalid over Claim 17 of the ’562 Patent,” Johnson ¶¶2279-56, and (3) “the asserted claims of the ’656 Patent are invalid over claim 18 of the ’573 Patent.” Johnson ¶¶2457-77. For the reasons set forth below, I disagree.

A. The asserted claims of the ’930 Patent are not invalid over claim 18 of the ’573 Patent.

3319. In my opinion, the asserted claims of the ’930 Patent are valid for the reasons set forth below. To start, claim 1 of the ’930 Patent recites “a software update function,” but claim 18 of the ’573 Patent recites nothing concerning updating software. Because this missing element is not obvious, the claims of the ’930 Patent are patentably distinct from claim 18 of the ’573 Patent. This and other non-obviousness differences are discussed below.

1. Claim 1

i. [1.d] security information comprising authentication information for a first remote server system

3320. Dr. Johnson asserts that the language of claim 18 of the ’573 Patent that recites “wherein said at least one digital picture frame is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in said memory” renders this element obvious. Johnson ¶2108. Dr. Johnson further asserts that, although Claim 18 of the ’573 Patent does not disclose storing security information for a first remote server system in memory, it would be obvious based on the fact that Claim 18 recites authenticating at least one server system. Johnson ¶¶2110-12.

3321. However, nothing in this recitation of claim 18 suggests it would be obvious for a digital display apparatus to store in memory authentication information for a first remote server system. Authentication can be performed in a variety of ways, and thus claim 18’s use of authentication does not render the ’930 Patent’s recitation of specifically storing security information comprising authentication information for a first remote server system obvious. I note

that Dr. Johnson attempts to use the specification of the ’573 Patent against the ’930 Patent, but my understanding is that the specification of the ’573 Patent can only be used for understanding claim terms, not to assert that an unclaimed feature in the ’573 Patent of storing security information in memory renders claim 1 of the ’930 Patent invalid.

3322. It should also be noted that the SSL and TLS that Dr. Johnson cites have two modes. One is when the server is authenticated to the client, but the client need not store anything in memory. The client simply verifies the server’s digital certificate and then uses the public key from that certificate. This is not “storing.” At most, the information is transient in computer memory of the client. The second mode is mutual authentication where both the client and server have a digital certificate that they present to each other.

3323. Apparently recognizing this deficiency, Dr. Johnson takes the position that Elgamal or RFC 2246, in combination with claim 18 of the ’573 Patent, render this element obvious. Johnson ¶¶2113-21.

3324. But, as I have explained in this report, although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in systems or by devices such as the digital display apparatus recited in the ’930 Patent claims. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶2114-18. Dr. Johnson then states: “In my opinion, a POSITA would have been motivated to combine the teachings of Elgamal and RFC 2246 with systems involving network-connected display devices, such as those disclosed in the ’573 Patent, because it would allow for the secure distribution of images and other digital content. A POSITA would have found it obvious to use the authentication techniques described in Elgamal and RFC 2246 to prevent malicious activities and allow the client

(e.g., a network-connected frame device) to ensure it is communicating with the correct server before downloading content from that server." Johnson ¶2119.

3325. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices, such as the digital display device of the '930 Patent (e.g., devices other than powerful desktop computers).[291] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[292] Given those challenges still existed in 2004, it would not be obvious to simply "throw in" SSL or TLS as Dr. Johnson suggests.

3326. Furthermore, TLS and Elgamal both rely on digital certificates for authentication. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

3327. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key.

[291] https://www.embedded.com/implementing-ssl-on-8-bit-micros/.

[292] *Id.*

Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

3328. Dr. Johnson does not address how the systems/devices of the '930 Patent would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Dr. Johnson does not discuss the steps to implement this.

3329. Dr. Johnson states: "A POSITA would have found it obvious to incorporate the secure communication techniques of Elgamal and RFC 2246 into the digital picture frame of claim 18 because it would enable the digital picture frame to authenticate the server system and because it is a combination of prior art elements according to known methods to yield predictable results and a simple substitution of one known element for another to obtain predictable results." Johnson ¶2121. This is incorrect as I explained above. Dr. Johnson does not address the many steps needed to implement digital certificates. A combination of claim 18 of the '573 Patent with Elgamal or TLS would not be simple or obvious.

3330. For at least these reasons, in my opinion, claim 1 of the '930 Patent is valid over claim 18 of the '573 Patent.

ii. [1.e] and a unique identifier for said digital display apparatus,

3331. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "is configured to generate package data comprising said image data and said preferences and to periodically relay said package data comprising said image data and said preferences to said at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences" renders this element

obvious. Johnson ¶2122. Dr. Johnson further asserts that, although claim 18 of the ’573 Patent does not disclose storing a unique identifier for said digital display apparatus in memory, it would be obvious based on the fact that claim 18 recites that the frame device communicates with a server system, and alleges that it would be obvious for the frame device to store a unique identifier to identify itself to the server system, and that the server system would maintain a mapping of frame devices using unique identifiers. Johnson ¶2123.

3332. However, nothing in this recitation of claim 18 suggests it would be obvious for a digital display apparatus to store in memory a unique identifier for said display apparatus. Devices can communicate with, and identify themselves to, servers in a variety of ways, and thus claim 18’s use of recitation that the frame device and the server system communicate periodically does not render the ’930 Patent’s recitation of specifically storing a unique identifier in memory of the digital display apparatus obvious.

3333. Apparently recognizing this deficiency, Dr. Johnson takes the position that Nishiyama, Elgamal, or RFC 2246, in combination with claim 18 of the ’573 Patent, render this element obvious. Johnson ¶¶2124-30.

3334. Dr. Johnson first attempts to combine Nishiyama with claim 18 of the ’573 Patent. Johnson ¶¶2125-26. As I explain throughout this report, Nishiyama is in the field of *Interactive Video Distribution Systems*,[293] and is not analogous art. The Patents-in-Suit are in the field of consumer digital display devices. The disclosure of Nishiyama would not have logically commended itself to an inventor’s attention in considering this problem.

3335. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, and that existing

[293] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm.

client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See e.g.*, '930 Patent 2:20-27, 5:10-33, 6:12-21. Nishiyama does not address these problems, as Nishiyama is primarily concerned with providing advertisements for display on digital billboards according to a schedule to reduce the duration of transmissions and to avoid transmitting during heavy load times. Nishiyama at 4:31-45, 13:40-61.

3336. Being in completely different fields, it is unlikely that a POSITA would look to Nishiyama. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and claim 18 of the '573 Patent, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

3337. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide for storing a unique identifier. Johnson ¶¶2127-30. Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message

> includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

3338. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

3339. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶2128. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *see, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier"), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

3340. Additionally, as I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power that would not have been obvious to use or combine with a resource-constrained display device. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices, such as the digital display device of the '930 Patent (e.g.,

devices other than powerful desktop computers).[294] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[295] Given those challenges still existed in 2004, it would not be obvious to simply "throw in" SSL or TLS as Dr. Johnson suggests.

3341. Furthermore, in Dr. Johnson's referencing of TLS and Elgamal, he has missed one rather important point. For authentication, both of those technologies rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

3342. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

3343. Dr. Johnson does not address how the systems/devices of the '930 Patent would be modified to store and present digital certificates or any other client identification feature. Implementing digital certificates requires multiple steps. One of the first is purchasing digital

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[294] https://www.embedded.com/implementing-ssl-on-8-bit-micros/.

[295] *Id.*

certificates. Then, one must determine where server certificates would be stored. Dr. Johnson does not discuss the steps to implement this.

3344. For at least these reasons, in my opinion, claim 1 of the '930 Patent is valid over claim 18 of the '573 Patent.

iii. [1.g] a processor configured to control the display of image data from said plurality of image data files in said image display region in accordance with said onboard software in said inside of said integrated housing;

3345. I note that Dr. Johnson used different claim numbering here than in his obviousness analysis to refer to and discuss "a processor configured to control the display of image data from said plurality of image data files in said image display region" and "in accordance with said onboard software in said inside of said integrated housing" separately. Johnson ¶¶2137-42. However, for the sake of simplicity, I refer to the numbering used in Dr. Johnson's obviousness analysis, and thus discuss both elements here.

3346. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "operating system software located inside said digital picture frame configured to operate according to preferences comprising an image display list defined by a user, said at least one digital picture frame comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs" renders these elements obvious. Johnson ¶¶2137, 2141. Dr. Johnson further asserts that, although Claim 18 of the '573 Patent does not disclose "a processor configured to control the display of image data from said plurality of image data files in said image display region in accordance with said onboard software in said inside of said integrated housing," it would be obvious based on the fact that claim 18 of the '573 Patent recites operating system software that the frame device would have a processor to execute the operating system software. Johnson ¶¶2138, 2142.

3347. However, Claim 1 of the ’930 Patent recites a different structure—a processor—than what is claimed in the ’573 Patent. Although claim 18 of the ’573 Patent recites operating system software, nothing in the claim language of claim 18 of the ’573 Patent suggests “a processor configured to control the display of image data from said plurality of image data files in said image display region.” Recognizing this deficiency, Dr. Johnson turns to the specification of the ’573 Patent. However, I again reiterate my understanding that the specification of the ’573 Patent can only be used for understanding claim terms, not to assert that an unclaimed feature in the ’573 Patent of a processor renders claim 1 of the ’930 Patent invalid.

3348. For at least these reasons, in my opinion, claim 1 of the ’930 Patent is valid over claim 18 of the ’573 Patent.

iv. [1.h] communication circuitry configured to engage a network medium in said inside of said integrated housing under the control of said processor;

3349. Dr. Johnson asserts that the language of claim 18 of the ’573 Patent that recites “said at least one server system coupled to said at least one digital picture frame via said network,” and that the digital picture frame “automatically initiat[es] communication with said server system” renders this limitation obvious. Johnson ¶2143. However, claim 18 does not recite the specific communication circuitry within an integrated housing and under the control of a processor, as recited in claim 1. The broad disclosure of the ’573 Patent that the digital picture frame communicates with a server does not teach or suggest the specific structure recited in the ’930 Patent.

3350. Apparently recognizing this deficiency, Dr. Johnson relies on portions of Bandaru, which disclose a digital media frame (DMF) that includes “an interface circuit” having “at least one receiving port capable of identifying various types of networking protocols that are used to transfer the image data,” that is operated using a processor. Johnson ¶2149. Dr. Johnson asserts

that Bandaru's "interface circuit" *could* be located in an integrated housing and "would protect the network interface from damage, save space, and make use of the network interface more convenient among other advantages." Johnson ¶¶2146, 2151. These reasons are not disclosed in either the '573 Patent or Bandaru; Dr. Johnson merely offers vague reasons to combine the '573 Patent and Bandaru. Moreover, as discussed above, Bandaru is not "prior art."

3351. For at least these reasons, in my opinion, claim 1 of the '930 Patent is valid over claim 18 of the '573 Patent.

v. [1.i] wherein said onboard software comprises: an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region; [1.j] a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, [1.k] said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications, [1.l] and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files; [1.m] an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system;

3352. For these elements, Dr. Johnson asserts that the following language of claim 18 of the '573 Patent renders these elements obvious: "operating system software located inside said digital picture frame configured to operate according to preferences comprising an image display list defined by a user," "coupled to said at least one digital picture frame via said network," "automatically initiat[es] communication with said server system and issu[es] a request for a current one of said package data comprising said image data and said preferences," "periodically relay said package data comprising said image data and said preferences to said at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system and issuing a request for a current one of said package

data comprising said image data and said preferences," and "is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in said memory." Johnson ¶¶2153-68.

3353. However, claim 18 of the '573 Patent also does not recite obtaining image data from memory for rendering specifically. Also, while claim 18 of the '573 Patent recites that the digital picture frame has operating system software, claim 1 of the '930 Patent recites that its onboard software includes specific structures, namely, the image display function, the remote connection function, the authentication function, and the software update function further disclosed below. Unlike the '573 Patent, the '930 Patent recites the onboard software as including these structural programming functions. Claim 1 of the '930 Patent is thus patentably distinct from claim 18 of the '573 Patent.

3354. Again, my understanding of the Claim Construction Order issued in this case is that the Court found the "onboard software" recited in claim 1 of the '930 Patent to have a definite structure and "is not a generic term or black box recitation of structure or abstraction, but rather a specific reference to software used for a specific purpose."[296] Given that the specific functions recited in claim 1 of the '930 Patent are recited as comprised in the onboard software, these specific functions also are part of the claimed onboard software structure. Claim 1 of the '573 Patent does not recite its operating system software in this way. Claim 1 of the '930 Patent recites a patentably distinct software structure.

3355. For at least these reasons, in my opinion, claim 1 of the '930 Patent is valid over claim 18 of the '573 Patent.

[296] Claim Construction Order, page 9.

vi. [1.n] a software update function configured to obtain an updated version of said onboard software from said server [1.o] and to replace said current version of said onboard software in said memory with said updated version.

3356. As explained above, the specific onboard software structure recited in claim 1 of the ’930 Patent is patentably distinct from claim 18 of the ’573 Patent. Claim 18 also does not recite any elements concerning updating software. And it would not have been obvious to add such an element.

3357. Dr. Johnson asserts that the language of claim 18 of the ’573 Patent that recites “operating system software located inside said digital picture frame,” renders this claim element obvious in combination with Hoyle, Nishiyama, Windows 98, Criss, or Kottapurath.” Johnson ¶¶2171-85.

3358. But Dr. Johnson is combining three or more prior art references with claim 18 of the ’573 Patent, which is a real stretch. He is resorting to hindsight bias reasoning, piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

3359. Regarding Hoyle, a POSITA would not have combined Hoyle with claim 18 of the ’573 Patent. As explained by the Patent Trial and Appeal Board (PTAB) during *inter partes* reexamination of the ’573 Patent:

> With respect to claim 13, the Requester has not provided a reason for one skilled in the art to combine the teachings of Hoyle with the teachings of Muoio, Bitetto, and

> Moon. Hoyle's discussion of the prior art suggests that any updating of the software is needed because of a need to update advertising information in the client (see Hoyle, column 2, lines 6-21); however, the invention of Muoio, Bitetto, and Moon does not have any advertising that would need updating. Since Hoyle's teachings therefore do not appear to be addressing a problem associated with Muoio, Bitetto, and Moon, it would not be obvious to combine the four teachings together.[297]

3360. The PTAB agreed that there was no reason to combine Muoio, Bitetto, and Moon with Hoyle. The PTAB also stated it agreed that Hoyle does not disclose "obtaining an update" within the context of the claims of the Asserted Patents. *Id.*

3361. Hoyle is also not analogous art to the Asserted Patents. Hoyle is directed to providing banner advertisements in a web browser.

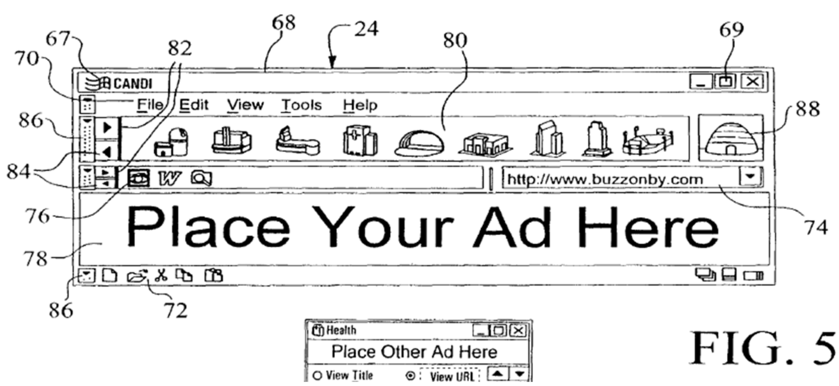

FIG. 5

3362. The Asserted Patents are in the field of consumer digital display devices.

3363. Additionally, the Hoyle reference is not reasonably pertinent. The Asserted Patents explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly

[297] PTAB Decision on Appeal dated January 4, 2013, at 25-27 (quoting the Examiner).

because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices.[298] Hoyle does not address these problems, as Hoyle is primarily concerned with providing non-user-selected banner advertisements (i.e., any advertising content, not specific content intended for or associated with a particular device) for display in a user's web browser (ADM server 22 handles "advertising selection"). Hoyle at 12:24-25.

3364. Hoyle describes an "automatically upgradeable software application," Hoyle at Abstract, that runs on a "conventional personal computer." Hoyle at 7:14-15. The software program is intended to deliver targeted advertising to the user. "The software application includes programming that accesses the server on occasion to determine if one or more components of the application needs upgrading to a newer version. If so, the components are downloaded and installed without requiring any input or action by the user." Hoyle at Abstract. Hoyle's "software application 10" has two "modules"—a "graphical user interface (GUI) program module 12" and an "advertising and data management (ADM) program module 14" which together "act as a single software application." Hoyle at 6:62-67. Further, Hoyle expressly states that the computer that runs Hoyle's GUI and ADM modules have separate operating system software such as, for example, Windows 98 or Windows NT, stating:

> In general, GUI module 12 contains the basic programming necessary to provide a user interface to the computer's software applications and operating system (e.g. Windows98 or WindowsNT.

Hoyle at 7:6-9.

3365. The GUI and ADM software applications of Hoyle are not operating system software. Clearly, the GUI and ADM of Hoyle are client software application programs distinct

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[298] *See e.g.*, '930 Patent 2:20-27, 3:35-40, 5:10-33, 6:12-21.

from operating system software, and that in fact depend on conventional computer operating system software, such as Windows 98 or Windows NT, to operate.

3366. Hoyle does not disclose any embodiments pertaining to updating operating system software. In fact, Hoyle is directed to updating only particular portions of application software, stating that "one problem with these currently available programs is that these parameters can only be changed by replacement of an entire program with an updated, revised version, making it difficult to respond to desired changes in advertising approaches." Hoyle at 2:29-33. Hoyle thus teaches away from obtaining a software update and replacing a previous program with the new version.

3367. A POSITA would therefore not be motivated to combine claim 18 of the '573 Patent with Hoyle, and Hoyle does not provide for obtaining an updated version of said onboard software from said server and to replace said current version of said onboard software in said memory with said updated version, as claimed in claim 1 of the '930 Patent.

3368. Dr. Johnson fails to provide valid and reasonable reasons why Hoyle is relevant to the Asserted Patents now—when the examiner and the PTAB did not consider it relevant previously. Hoyle is therefore deficient to provide this element of the claims, and relying on Hoyle is duplicative of issues already decided during reexamination.

3369. Further, it should also be noted that none of Nishiyama, Criss, and Kottapurath are in the same field of endeavor as the Patents-in-Suit: personal digital display devices. I understand that, if a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital display devices required manual operation and loading of images, that other systems such as electronic mail systems

required that a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital display device design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

3370. Dr. Johnson next discusses Nishiyama. Johnson ¶2177. However, the very section that Dr. Johnson points to in Nishiyama belies his interpretation. Dr. Johnson points to "Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20." Nishiyama at 36:6-8. This portion of Nishiyama states:

> 1-3-5. Remote Maintenance of Software of Terminal System 30 1. Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20.
>
> Note: when commercially-available remote-access software is used, terminal systems 30 for installing software can be specified.

Nishiyama at 36:4-11.

3371. Nishiyama thus similarly discloses that remote maintenance can be performed on terminal systems by installing, modifying, updating, and maintaining the software via the network under control of the server using "commercially-available remote-access software." Nishiyama at 36:4-11. However, while Nishiyama discloses that software of terminals can be remotely updated, Nishiyama states this is done using "remote-access software," indicating software updates are installed from the server using such remote-access software. That is different than the client device automatically downloading and installing an update. As claimed, the display apparatus obtains an

update for its onboard system, as opposed to the server remotely accessing the client device to install updates. Furthermore, such remote access software would not be obvious to install or use on a resource-constrained frame device.

3372. Also, as I explain throughout this report, Nishiyama is in the field of *Interactive Video Distribution Systems*,[299] and is not analogous art. Nishiyama is not in the same field of endeavor as the Patents-in-Suit because Nishiyama is directed to providing advertisements to public billboards. The Patents-in-Suit are in the field of consumer digital display devices. The disclosure of Nishiyama would not have logically commended itself to an inventor's attention in considering his problem.

3373. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '930 Patent at 2:20-27, 5:10-33, 6:12-21. Nishiyama does not address these problems, as Nishiyama is primarily concerned with providing advertisements for display on digital billboards according to a schedule to reduce the duration of transmissions and to avoid transmitting during heavy load times. Nishiyama at 4:31-45, 13:40-61.

3374. Being in completely different fields, it is unlikely that a POSITA would look to Nishiyama. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's

[299] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm.

degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and claim 18 of the '573 Patent, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

3375. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would find it obvious to use Criss' software updates. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. This is in an entirely different field than the Patents-in-Suit. Criss is related to managing cellular networks, not to the field of consumer digital display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not necessarily have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss), and would not be motivated or able to combine Criss with anything else.

3376. For its part, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" a host computer 30 "transmits a request to the

mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

3377. Claim 1 of the '930 Patent requires that the digital display apparatus obtain software updates; meanwhile, Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. The Patents-in-Suit are clear that the intent of the Patents-in-Suit is that the digital display apparatus simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." *See*, *e.g.*, '930 Patent at 5:10-21 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server.

3378. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶¶2182-83. Kottapurath's USPTO classification is 713/2 ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is Loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). Specifically, Kottapurath is directed to updating software on a general computing device, a PC. *See* Kottapurath at Abstract, 2:22-29. The device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

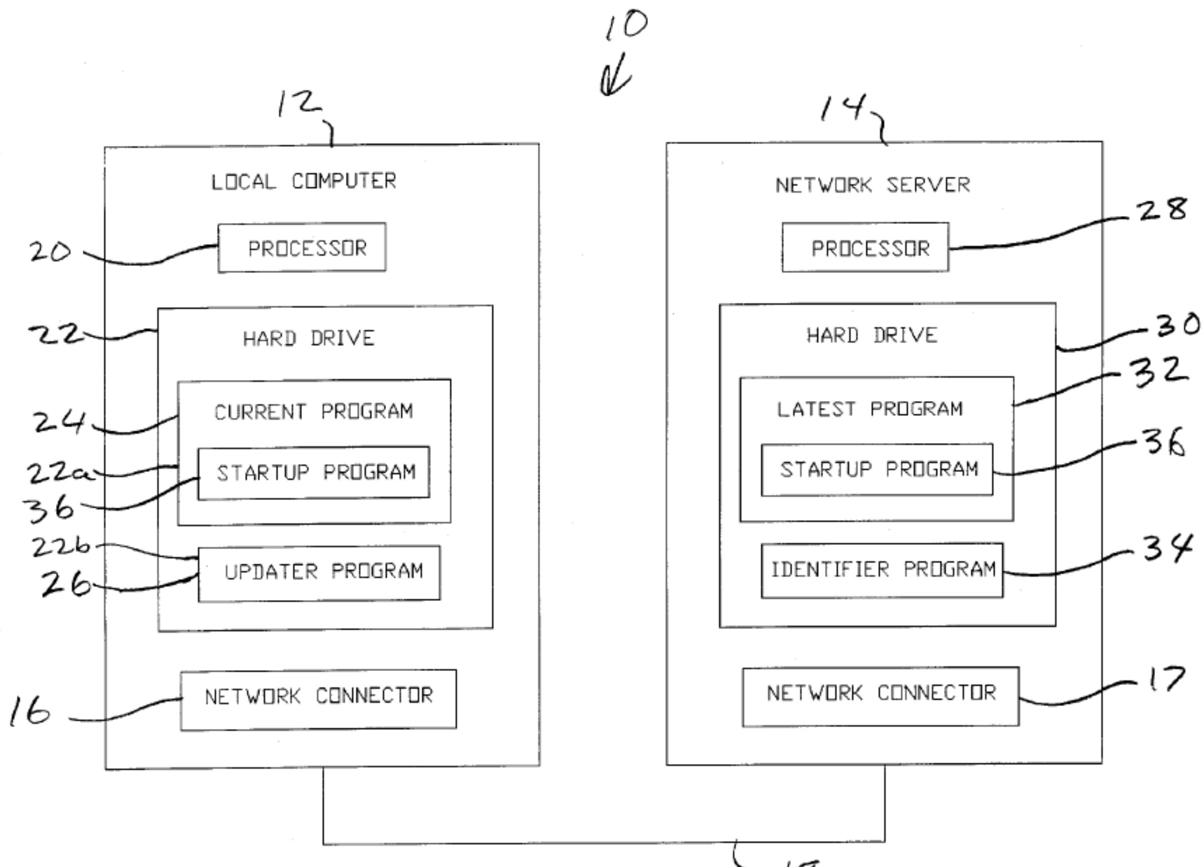

Fig. 1

3379. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements. Figure 3 of Kottapurath shows the process:

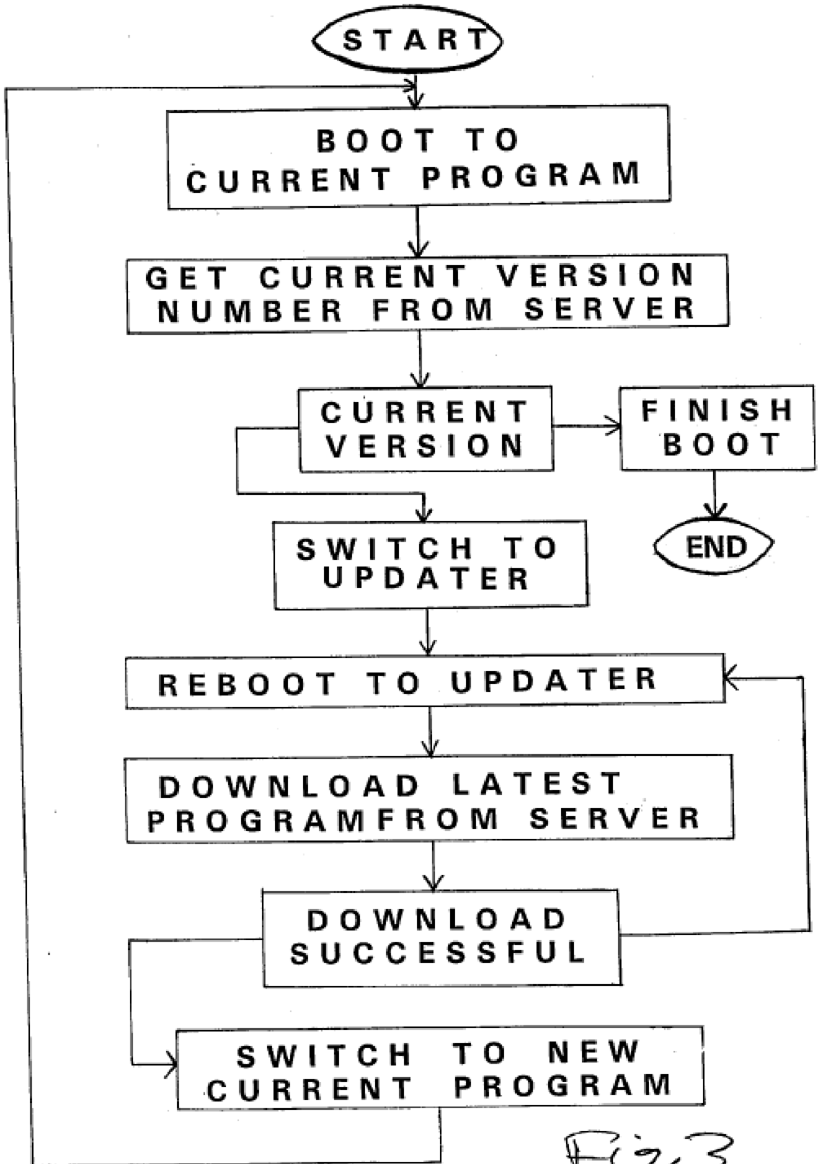

Fig. 3

3380. Regarding Windows 98, Dr. Johnson states:

Moreover, the Windows 98 system includes a Windows Update Wizard, "a database maintained by Microsoft that contains drivers, system utilities, and other software. This gives you one convenient place on the Internet to check to see if there are Windows 98 updates available for your system." See *Using Windows 98* at 292-93. The Update Wizard "scan[s] the Internet for updated system files," and, "As updates are found, the wizard refreshes the screen and the list of files available for update." Id. The user may then "Click on Install to install the file." Id.; see also id. at FIGS. 16.1-16.4; see also id. at 500, 979, FIG. A.10.

Johnson ¶2179.

3381. Again, this claim element requires the digital display apparatus to obtain software updates automatically. The book *Using Windows 98 Platinum Edition*[300] has a section on updating Windows 98. That section is three pages long (pages 292 to 294) with multiple steps. These steps must be executed by a user:

a. Click Start and click the Windows Update icon. Internet Explorer comes up automatically and attempts to connect to Microsoft Windows Update site shown in figure 16.1.

b. Click on Update Wizard. A registration wizard pops up if this is the first time you have used the Update Wizard (see figure 16.2). You must fill out the registration to continue. Part of the registration is to upload your configuration files to Microsoft. You can deselect a check box, so this doesn't happen if you want to.

c. The Update Wizard web page contains two options. Update and Restore. Click Update to scan the internet for updated system files. A new Internet Explorer window pops up, as shown in figure 16.3. The update Wizard loads necessary components into your system and then scans the database for updated drivers.

d. As updates are found the wizard refreshes the screen and the list of files available for update. Select a file in the list on the left to see its description as well as its size, and approximate download time on the right side of the main windows.

e. Click on Install to install the file. Only one file can be installed at a time, and your computer may need to be restarted after a file is installed. Let the computer restart

[300] Bott, E., & Person, R. (1998). *Using Microsoft Windows 98 with Cdrom*. Que Corp.

if necessary before downloading a second update in order to verify that it is still working properly.

3382. The section goes on to discuss the various problems that can arise when updating Windows 98. But even if everything goes smoothly, an operating system consists of numerous individual files and applications. Windows 98 required a user to individually download and install these one at a time, with potentially numerous pauses to restart the system. Thus, the update process of Windows 98 also runs contrary to the disclosure of the Patents-in-Suit.

3383. Dr. Johnson opines that: "a POSITA would have found it obvious to combine the software update function taught by Hoyle, Nishiyama, Windows 98, Criss and/or Kottapurath into the system for distributing image data of claim 18 to allow the digital picture frame to obtain an updated version of the operating system software and replace the current version with the updated version," and that doing so "would enable the digital picture frame to upgrade its functionality without requiring any action on the part of the user and is a combination of prior art elements according to known methods to yield predictable results and a simple substitution of one known element for another to obtain predictable results." Johnson ¶2185. But the motivation to combine is lacking. There is no logical or obvious reason for a POSITA to add software updates to claim 18 of the '573 Patent, regardless of whether one *could* theoretically modify claim 18 to include software updates. As has been pointed out, these are all in diverse fields and a POSITA, as described by Dr. Johnson, would not have even been skilled in most of these fields or motivated to combine those diverse references.

3384. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically incorporate software updates in claim 18 of the '573 Patent using one of Nishiyama, Criss, Kottapurath, or Windows 98 (although, as indicated above, I do not agree

that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications.

3385. For at least these reasons, in my opinion, claim 1 of the '930 Patent is valid over claim 18 of the '573 Patent.

2. Claim 2

i. [2.] The digital display apparatus of claim 1, wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system.

3386. Claim 2 is valid for the same reasons as described above with respect to claim 1, and especially to the element of claim 1 regarding storing the unique identifier discussed in Sections XIII.B.4.iv.

3387. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "is configured to generate package data comprising said image data and said preferences and to periodically relay said package data comprising said image data and said preferences to said at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences" renders this element obvious. Johnson ¶¶2186-88.

3388. For at least these reasons, in my opinion, claim 2 of the '930 Patent is valid over claim 18 of the '573 Patent.

3. Claim 3

i. [3.] The digital display apparatus of claim 2, wherein said authentication function is further configured to provide device authentication information to said first remote server system prior to obtaining image data from said first remote server system.

3389. Claim 3 is valid for the same reasons as described above with respect to claim 1, and especially to the elements of claim 1 regarding storing security information in memory and the authentication function discussed in Sections XIII.B.4.iii, viii.

3390. Dr. Johnson asserts that the language of claim 18 of the ’573 Patent that recites “configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in said memory” renders this element obvious. Johnson ¶¶2189-90.

3391. Dr. Johnson asserts that the unique identifier in claim 17 of the ’562 Patent can be the claimed device authentication information in Claim 3 of the ’930 Patent. Johnson ¶2190. Claim 2, from which Claim 3 depends, already recites “wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system.” Therefore, in light of the principles of claim differentiation, Claim 3 must be referring to device authentication information other than the unique identifier, and thus Dr. Johnson has failed to show this element.

3392. For at least these reasons, in my opinion, claim 3 of the ’930 Patent is valid over claim 18 of the ’573 Patent.

4. Claim 4

i. [4.] The digital display apparatus of claim 1, wherein said onboard software further comprises an initialization function configured to prompt said first remote server system to associate a record with said digital display apparatus.

3393. Claim 4 is valid for the same reasons as described above with respect to claim 1.

3394. Dr. Johnson asserts that the language of claim 18 of the ’573 Patent that recites “operating system software located inside said digital picture frame configured to operate according to preferences comprising an image display list defined by a user” and “a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one digital picture frame and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system” renders this element obvious. Johnson ¶¶2189-90.

3395. As also explained above, the specific onboard software structure recited in claim 1 of the ’930 Patent is patentably distinct from claim 18 of the ’573 Patent. Claim 4 further recites this onboard software structure includes the recited initialization function.

3396. These elements of claim 18 referenced by Dr. Johnson have nothing to do with an account initialization message. Dr. Johnson seeks to cure this by referring to Hoyle and Windows 98. However, as described in detail above, Hoyle and Windows 98 are non-analogous art that are not reasonably pertinent, and further, a POSITA would not have been motivated to combine Hoyle or Windows 98 with claim 18 of the ’573 Patent.

3397. Dr. Johnson states: “a POSITA would have recognized and found it obvious to incorporate the client registration techniques of Hoyle and Windows 98, which comprise an initialization function configured to prompt the server to associate a record with the digital picture frame, into the operating system of the digital picture frame of claim 18 because it would allow

for identification and maintenance of the specific digital picture frame and ensure that the server delivers the correct image data and preferences to the correct digital picture frame. This combination is no more than a combination of prior art elements according to known methods to yield predictable results and a simple substitution of one known element for another to obtain predictable results." Johnson ¶2200.

3398. Dr. Johnson states that:

> Hoyle discloses that the server 22 may "assign[] a unique ID to [a] user and then store[] that ID along with the received demographic data . . . in the user/demographics data base 46." Hoyle at 25:17-21. User registration "allows for identification and maintenance of the specific installation by the computer from which the user is working" and "identifies and captures data about the user reflecting information including user identity, computing environment and usage, and user demographic profile." Id. at 33:57-62; see also id. at 12:52-56, 25:50-56, 26:49-27:5, 27:25-32, 34:14-21.

Johnson ¶2198.

3399. I note again that the '930 Patent provides:

> The initialization process begins at step 800 when the frame device is connected to a power Source and a communication medium such as a telephone line or network connection. The frame device may be configured to automatically connect via a wireless connection or the user may manually couple it to a power source and communication medium.
>
> . . .
>
> At step 805, the data repository is analyzed to determine whether there is a record for the frame device initiating the connection. If a record for the frame device is not located, step 807 executes and an image prompting the user to create a picture box account associated with that frame device is displayed to the user.
>
> . . .
>
> Once the picture box is obtained, step 813 executes, at step 813 the behavior characteristics of the frame device is determined. The behavior characteristics may be established by default or customized according to the user's preferences. When the behavior characteristics are determined, step 815 executes. At step 815, the invention contemplates loading the behavior characteristics into the data repository for use by the frame device.

’930 Patent at 23:59-65, 24:9-16, 24:39-46.

3400. Therefore, the initialization function as described, for example, in this portion of the ’930 Patent refers to an automatic initialization process carried out by the display apparatus to ensure the user has a record associated with the remote server system, which is not disclosed in Hoyle. Hoyle specifies that it creates and stores a user profile “when a user first accesses client application 10.” Hoyle at 11:65-12:44

3401. Similarly, as I discussed with respect to claim 1 of the ’930 Patent, Windows 98 required users to manually perform actions, such as the “click to update Wizard” action that Dr. Johnson himself relies on. Johnson ¶2199 (citing Win98 at 292, 294, FIG. 16.5). Thus, the update process of Windows 98 also runs contrary to the disclosure of the Patents-in-Suit.

3402. For at least these reasons, in my opinion, claim 4 of the ’930 Patent is valid over claim 18 of the ’573 Patent.

5. Claim 5

i. [5.] The digital display apparatus of claim 1, wherein said digital display apparatus is configured to display an account initialization message.

3403. Claim 5 is valid for the same reasons as described above with respect to claim 1, as well as claim 4 of the ’930 Patent.

3404. Furthermore, Dr. Johnson states: “To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious in view of Hoyle that the digital display apparatus is configured to display an account initialization message served from said server system. See above (e.g., Section XI.D.2.e.(1)).” Johnson ¶1888.

3405. Dr. Johnson points to a login and password screen displayed in Hoyle asserting that this login screen discloses this claim limitation. However, a POSITA would readily understand that a login screen is not initializing an account, but rather requires an existing account in order to

function. Even if one were to argue that Hoyle provides one the opportunity to set up a new account from this login, Dr. Johnson has not explained ***why*** one would combine Hoyle with Muoio, which does not disclose this claim element. *See* Johnson ¶1392.

3406. Muoio is directed towards displaying images within a building such as a house, Muoio at 3:44; 8:34-37; Figure 4, a museum, Muoio at 1:48-64, or perhaps an office building. Muoio at 1:65. In such contained environments there is no need for an account. Rather, art is distributed throughout the environment. Muoio at 2:12-13. There is no need for an account or login, which is why Muoio never mentions accounts, login, authorization, or authentication.

3407. Regarding the Stylistic Tablet running Windows 98, Dr. Johnson merely states: "To the extent not disclosed by Stylistic Tablet running Win98, a POSITA would have found it obvious in view of Hoyle that the digital display apparatus is configured to display an account initialization message served from said server system. See above (e.g., Section XI.D.2.e.(1))." Johnson ¶1888. I first note that this appears to be a tacit admission that the Stylistic Tablet running Windows 98 does not disclose this claim limitation. On that point I agree.

3408. Furthermore, this brief statement from Dr. Johnson does not actually address why a POSITA would want to make such a combination. Dr. Johnson does not disclose what benefit the POSITA would derive from this combination. Nor does Dr. Johnson address how such a combination would have improved Windows 98, the Stylistic Tablet, or Hoyle.

3409. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "operating system software located inside said digital picture frame configured to operate according to preferences comprising an image display list defined by a user," "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one digital picture frame and configured to obtain image data and said

preferences from said user and provide said image data and said preferences to said at least one server system," and "is configured to generate package data comprising said image data and said preferences and to periodically relay said package data comprising said image data and said preferences to said at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system" renders this element obvious. Johnson ¶¶2208-09.

3410. Dr. Johnson refers to elements of claim 18 that have nothing to do with an account initialization message, and Hoyle and Windows 98, as explained above regarding Claim 4, do not cure this deficiency, nor would a POSITA have been motivated to combine Hoyle or Windows 98 with claim 18 of the '573 Patent.

3411. For at least these reasons, in my opinion, claim 5 of the '930 Patent is valid over claim 18 of the '573 Patent.

6. Claim 6

i. [6.] The digital display apparatus of claim 5, wherein said account initialization message prompts a user to create an account with said first remote server system.

3412. Claim 6 is valid for the same reasons as described above with respect to claim 1, as well as claim 5 of the '930 Patent.

3413. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "operating system software located inside said digital picture frame configured to operate according to preferences comprising an image display list defined by a user," "a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one digital picture frame and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system," and "is configured to generate package data comprising said image data and said

preferences and to periodically relay said package data comprising said image data and said preferences to said at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system" renders this element obvious. Johnson ¶¶2214-15.

3414. Dr. Johnson refers to elements of claim 18 that have nothing to do with prompting a user to create an account, and Hoyle and Windows 98, as explained above regarding Claims 4 and 5, do not cure this deficiency, nor would a POSITA have been motivated to combine Hoyle or Windows 98 with claim 18 of the '573 Patent.

3415. For at least these reasons, in my opinion, claim 6 of the '930 Patent is valid over claim 18 of the '573 Patent.

7. Claim 7

i. [7] The digital display apparatus of claim 1, wherein said memory comprises a connection timing parameter that indicates a timing interval for said digital display apparatus to automatically initiate periodic connections with said first remote server system.

3416. Claim 7 is valid for the same reasons as described above with respect to claim 1.

3417. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "compris[es] memory and operating system software located inside said digital picture frame," "at least one server system [is] coupled to said at least one digital picture frame via said network," and "periodically relay said package data comprising said image data and said preferences to at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences" renders this element obvious. Johnson ¶¶2214-15.

3418. As stated above, Dr. Johnson refers to elements of claim 18 directed to periodically relaying said package data, and asserts that a POSITA would have found it obvious to include a "connection timing parameter" in the memory of a digital display apparatus to achieve this functionality. Johnson ¶2216. However, nothing in claim 18 of the '573 Patent suggests using specifically a connection timing parameter stored in memory of a digital display apparatus to accomplish this.

3419. Recognizing this deficiency, Dr. Johnson attempts to cure this by referring to Criss, Hoyle, and Nishiyama. However, as described in detail above, a POSITA would not have been motivated to combine Criss, Hoyle, or Nishiyama with claim 18 of the '573 Patent. Additionally, Dr. Johnson cites to Hoyle as disclosing:

> Once a group of banners have been displayed their allotted number of times, timer/display component 110 notifies flag alert component 112, which sets a new banner flag. This flag is checked periodically and if set, ADM server 22 is accessed to download new banner advertising.

Hoyle at 18:55-59.

3420. While Hoyle discloses downloading new banner advertising when banners have been displayed an allotted number of times and a flag is set, Hoyle does not disclose a connection timing parameter indicating *a timing interval* that initiates periodic connections with a server, nor specifically a timing parameter stored in memory. This claim element is not obvious.

3421. For at least these reasons, in my opinion, claim 7 of the '930 Patent is valid over claim 18 of the '573 Patent.

8. Claim 8

i. [8.] The digital display apparatus of claim 1, wherein said memory comprises an image display parameter comprising a timing interval for periodically selecting an image data file from said memory for rendering on said display region.

3422. Claim 8 is valid for the same reasons as described above with respect to claim 1.

3423. For at least these reasons, in my opinion, claim 8 of the ’930 Patent is valid over claim 18 of the ’573 Patent.

9. Claim 15

3424. Dr. Johnson simply refers to his arguments concerning Claim 1 and its dependent claims for Claim 15. Johnson ¶¶2251-73. The elements of Claim 15 are valid for the reasons as Claims 1 and 5 of the ’930 Patent discussed above.

B. The asserted claims of the ’930 Patent are not invalid over Claim 17 of the ’562 Patent.

3425. In my opinion, the asserted claims of the ’930 Patent are valid for the reasons set forth below.

1. Claim 1

3426. I note that Dr. Johnson used different claim numbering here than in his obviousness analysis. Johnson ¶¶2137-42. However, for the sake of simplicity, I refer to the numbering used in Dr. Johnson’s obviousness analysis. Only claim elements with notable difference are addressed below.

i. [1.d] security information comprising authentication information for a first remote server system

3427. Dr. Johnson asserts that the language of claim 17 of the ’562 Patent that recites “apparatus for displaying content comprising image data received from a server system via a communications network on a display screen,” “a communications interface configured to

communicate with said server system via said communications network," and "a memory comprising a unique identifier for said apparatus, computer readable instructions different from said content for controlling the operation of said apparatus, and a version identifier for said computer readable instructions" renders this element obvious. Johnson ¶2303. Dr. Johnson further asserts that, although Claim 17 of the '562 Patent does not disclose storing security information for a first remote server system in memory, it would be obvious based on claim 17 to require instructions for causing the apparatus to receive authentication information from said server system. Johnson ¶2304.

3428. However, nothing in this recitation of claim 17 suggests an obvious need for the digital display apparatus to store in memory authentication information for a first remote server system. Authentication can be performed in a variety of ways, and thus claim 17's use of authentication and receiving authentication information from a server does not render the '930 Patent's recitation of specifically storing in memory security information comprising authentication information for a first remote server system obvious. I note that Dr. Johnson attempts to use the specification of the '562 Patent against the '930 Patent, but the specification of the '562 Patent can only be used for understanding claim terms, not to assert that an unclaimed feature in the '562 Patent of storing security information in memory renders claim 1 of the '930 Patent invalid.

3429. Apparently recognizing this deficiency, Dr. Johnson takes the position that Elgamal or RFC 2246, in combination with claim 17 of the '562 Patent, renders this element obvious. Johnson ¶¶2307-16.

3430. But, as I have explained in this report, although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in systems or by resource-constrained

devices, such as the digital display apparatus recited in the '930 Patent claims. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶¶2310-13. Dr. Johnson then states: "In my opinion, a POSITA would have recognized that the secure communications techniques described in Elgamal or RFC 2246 involve storing security information comprising authentication information for a first remote server system in a memory. For example, a POSITA would have recognized that the security information would be stored in memory to enable computations to be performed on the security information." Johnson ¶2315.

3431. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices, such as the digital display device of the '930 Patent (e.g., devices other than powerful desktop computers).[301] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[302] Given those challenges still existed in 2004, it would not be obvious to simply "throw in" SSL or TLS as Dr. Johnson suggests.

3432. Furthermore, TLS and Elgamal both rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates,

[301] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[302] *Id.*

and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

3433. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

3434. Dr. Johnson does not address how the systems/devices of the '930 Patent would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first steps is purchasing digital certificates. Then, one must determine where server certificates would be stored. Dr. Johnson does not discuss the steps to implement this.

3435. Dr. Johnson states: "A POSITA would have found it obvious to incorporate the secure communication techniques disclosed in Elgamal and RFC 2246 into the apparatus for displaying content of claim 1 because it would enable the apparatus to authenticate the server system and because it is a combination of prior art elements according to known methods to yield predictable results and a simple substitution of one known element for another to obtain predictable results." Johnson ¶2316. This is incorrect as I explained above. Dr. Johnson does not address the many steps needed to implement digital certificates. A combination of claim 17 of the '562 Patent with Elgamal or TLS would not be simple or obvious.

3436. For at least these reasons, in my opinion, claim 1 of the '930 Patent is valid over claim 17 of the '562 Patent.

ii. [1.e] and a unique identifier for said digital display apparatus,

3437. Dr. Johnson generally uses the same arguments as with respect to the unique identifier element of Claim 1 of the ’930 Patent. Johnson ¶801-08. As was stated in reference to claim 1 of the 930 patent, Dr. Johnson seems to admit that Bandaru does not explicitly teach this claim limitation, but asserts that “Bandaru discloses that the DMF network services includes a user profile database that stores the images added, deleted, selected, and/or subscribed to by the user within the user’s profile as the corresponding DMF’s default configuration, which necessarily requires a unique identifier for the corresponding DMF within the database.” Johnson ¶745.

3438. While databases do require identifiers, the user profile database would only potentially require a unique identifier for the user (although Bandaru does not even disclose that), and not for the DMF device. Dr. Johnson goes on to assert: “For example, the DMF network services would need to maintain a mapping of DMFs in remote locations with user profiles maintained by the server to know to which DMFs the profiles correspond.” Johnson ¶745. Again, Dr. Johnson seems to be at least tacitly acknowledging that Bandaru does not actually disclose this limitation. Furthermore, nothing in Bandaru even suggests any maintaining of a mapping of DMFs. Bandaru is also quite clear: the profiles described are user profiles, not DMF profiles. Moreover, Bandaru is not “prior art” as discussed above.

3439. Dr. Johnson then attempts to combine Nishiyama with Bandaru. As I explain throughout this report, Dr. Johnson ignores that Bandaru and Nishiyama are in entirely different fields. The USPTO primary classification for Bandaru is 715/748. Class 715[303] is *Data Processing: Presentation Processing Of Document, Operator Interface Processing, And Screen Saver Display Processing*. Subclass 748 is *User interactive multicomputer data transfer (e.g., file transfer)*. The

[303] https://www.uspto.gov/web/patents/classification/uspc715/defs715.htm

USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[304] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

3440. Being in completely different fields, it is unlikely that a POSITA would look in both for any reason. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology." The reference to that technology refers to the previous statement by Dr. Johnson: "The technology relevant to the asserted patents generally relates to the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and Bandaru, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

3441. Dr. Johnson also attempts to use Elgamal and RFC 2246 to provide the claimed "unique identifier." Specifically, Dr. Johnson refers to Elgamal at 8:5-20. That passage is shown here:

> The client sends a client-finished message which indicates that the client is satisfied with the server. In a present embodiment of the invention, the client-finish message includes a hash of all of the handshake protocol messages previously sent by the client. The hash is encrypted using the agreed upon bulk cipher plus a session key generated by the client, referred to in FIG. 4 as the client-write-key. Note that the hash function also is negotiated as part of the cipher specs. In addition, the connection-identification previously sent to the client by the server is transmitted to the server with the client-finish message to authenticate the channel. ***The server uses the client messages handshake hash to verify the integrity of the communication between client and*** server. This final integrity check will expose

[304] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

> third party intervention even if it occurred at the beginning of the handshake protocol.

Elgamal at 8:5-20 (emphasis added).

3442. The section of Elgamal that Dr. Johnson points to is clearly discussing message integrity, not client identification.

3443. Dr. Johnson also discusses RFC 2246, citing the RFC's "keys for [] symmetric encryption [that] are generated uniquely for each connection and are based on a secret negotiated by another protocol (such as the TLS Handshake Protocol)." Johnson ¶752. This section makes it quite clear that these are symmetric encryption keys that are unique to the session, not to either the client or server. In fact, should the same client start a new session with the same server, new unique keys will be generated. These keys do not—and cannot—identify the client device. Thus, Dr. Johnson only cites to portions of RFC 2246 that refer to sending a session identifier during a communication handshake with a server, *see, e.g.*, RFC 2246 at 34 ("The client hello message includes a variable length session identifier"), and not a unique identifier for an apparatus that is stored in the memory of said apparatus.

3444. For Dr. Johnson's combination of Bandaru with Elgamal or RFC 2246, one has to first disregard the plain language of Elgamal, then disregard the reasons that a POSITA would not have sought to combine Bandaru with Elgamal or RFC 2246. While these have been discussed previously in this report, they are reiterated here.

3445. Suggesting that Bandaru needs or would benefit from Elgamal or RFC 2246 ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru 3:1-4.

Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

3446. As I have explained, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices such as the Bandaru DMF (e.g., devices other than powerful desktop computers).[305] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[306] Given those challenges still existed in 2004, if Bandaru (filed in 1999) had intended SSL or TLS to be part of his invention or used with his invention, he would have disclosed that fact.

3447. Dr. Johnson also ignores Bandaru's disclosure of how its DMF receives images: "The DMF is capable of receiving image data from various external input devices, such as, digital cameras, video cameras, computers, telephone lines, television cables, and Internet servers or other types of networks." Bandaru at 3:1-4. Attaching a digital camera, video camera, television cables, or a computer to the DMF would certainly not necessitate authentication.

3448. "Telephone" is mentioned 5 times in Bandaru, including cellular. Bandaru at 10:20-28. When dialing a specific phone number, there is no necessity to "ensure that the device is communicating with the correct server" since one has directly dialed the server.

[305] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[306] *Id.*

3449. Although Bandaru describes receiving an image from an internet server, this appears to be a standard internet server and not an image server. Bandaru is quite clear: "Internet address, audio information, image orientations, and so on. The color assignment maps out image color distribution from an available color grid according to the color distribution of the image data. The date and time of the image data created and received indicates the date and time that each image was created and the date and time that the image was received by the DMF 102. The Internet address indicates ***which Internet node was used for sending the image data to the DMF 102***. In one embodiment, the Internet address links to other websites that are related to the image. For example, if an image describes a child, the linked websites describe child's family." Bandaru at 4:24-36 (emphasis added).

3450. Even in 2023, all one needs to get an image from any internet server is the URL, no authentication required. That is actually demonstrable on Amazon.com. The following are examples:

a. https://m.media-amazon.com/images/I/71m-fHmZNuL._AC_SL1500_.jpg

b. https://m.media-amazon.com/images/I/81HmLEAJEfL._AC_UY741_.jpg

c. https://m.media-amazon.com/images/I/61if8QBD8GL._AC_SL1200_.jpg

d. Or from the U.S. Department of Defense https://media.defense.gov/2023/Sep/06/2003295238/825/780/0/230113-F-PU288-1040A.JPG

e. Or even Dr. Johnson's own image on Rice University's website https://www.cs.rice.edu/~dbj/dbj-small.jpg

3451. Even as of today, no authentication is needed to retrieve an image from an internet server.

3452. Bandaru does not have an image server at all. One can get images from attached cameras, computers, or via websites (i.e., internet servers). None of those pose any need for authentication.

3453. Furthermore, TLS and Elgamal both rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

3454. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key. Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

3455. Dr. Johnson does not address how Bandaru or claim 1 of the '930 Patent would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Bandaru describes retrieving images from various internet servers. There would be no way to force those servers to use digital certificates. The most one might do is use digital certificates for the DMF server, but Dr. Johnson does not discuss the steps to implement this.

3456. Regarding Muoio, Dr. Johnson admits that Muoio does not disclose or suggest storing in memory of a display apparatus a unique identifier for said digital display apparatus. Johnson ¶1323.

3457. Dr. Johnson then attempts to combine Nishiyama with Muoio. As I explain throughout this report, Dr. Johnson ignores that Muoio and Nishiyama are in entirely different fields. The USPTO primary classification for Muoio is 345/1.1. Class 345[307] is *Computer Graphics Processing and Selective Visual Display Systems*. Subclass 1.1 is *Plural Display Systems*. The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[308] The USPTO primary classification for Nishiyama is 725/32. Class 724 is *Interactive Video Distribution Systems*.[309] The subclass 32 is *Program, Message, Or Commercial Insertion Or Substitution*.

3458. For at least the reasons described in this section, this element is not obvious.

iii. [1.i] wherein said onboard software comprises: an image display function configured to obtain image data from said plurality of image data files in said memory for rendering in said image display region; [1.j] a remote connection function configured to automatically initiate communications with said first remote server system across said network medium, [1.k] said remote connection function further configured to send a request for image data to said first remote server system after initiating said communications, [1.l] and to receive in response to said request for image data a set of data from said first remote server system comprising one or more image data files; [1.m] an authentication function configured to authenticate said first remote server system prior to accepting said set of data from said first remote server system; [1.n] a software update function configured to obtain an updated version of said onboard software from said server [1.o] and to replace said current version of said onboard software in said memory with said updated version.

3459. For these elements, Dr. Johnson asserts that the following language of claim 17 of the '562 Patent renders these elements obvious: "computer readable instructions different from

[307] https://www.uspto.gov/web/patents/classification/uspc345/sched345.htm

[308] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

[309] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

said content for controlling the operation of said apparatus, and a version identifier for said computer readable instructions, said computer readable instructions comprising instructions for causing said apparatus to perform the steps of . . . receiving by said apparatus updated content from said server system; [and] displaying by said apparatus said updated content on said display screen," "an apparatus for displaying content comprising image data received from a server system via a communications network," "a communications interface configured to communicate with said server system via said communications network," "upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network," "a memory comprising a unique identifier for said apparatus, computer readable instructions different from said content for controlling the operation of said apparatus, and a version identifier for said computer readable instructions," "said computer readable instructions comprise instructions for causing said apparatus to receive authentication information from said server system," and "receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system; [and] updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions." Johnson ¶¶2338-54.

3460. While claim 17 of the '562 Patent recites that the apparatus comprises computer readable instructions that cause the apparatus to perform certain steps, claim 1 of the '930 Patent recites that its onboard software includes specific structures, namely, the image display function, the remote connection function, the authentication function, and the software update function further disclosed below. Unlike the '562 Patent, the '930 Patent recites this specific structure of the onboard software as including these structural programming functions. Claim 1 of the '930 Patent is thus patentably distinct from claim 17 of the '562 Patent.

3461. My understanding of the Claim Construction Order issued in this case is that the Court found the "onboard software" recited in claim 1 of the '930 Patent to have a definite structure and was not "is not a generic term or black box recitation of structure or abstraction, but rather a specific reference to software used for a specific purpose."[310] Given that the specific functions recited in claim 1 of the '930 Patent are recited as comprised in the onboard software, these specific functions also are part of the claimed onboard software structure. Claim 1 of the '562 Patent does not recite its computer readable instructions in this way, and thus claim 1 of the '930 Patent recites a patentably distinct software structure.

3462. For at least these reasons, in my opinion, claim 1 of the '930 Patent is valid over claim 17 of the '562 Patent.

2. Claim 2

i. [2.] The digital display apparatus of claim 1, wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system.

3463. In my opinion, claim 2 of the '930 Patent is valid over claim 17 of the '562 Patent for the same reasons as described above with respect to claim 1.

3. Claim 3

i. [3.] The digital display apparatus of claim 2, wherein said authentication function is further configured to provide device authentication information to said first remote server system prior to obtaining image data from said first remote server system.

3464. First, Claim 3 is valid for the same reasons as described above with respect to claim 1, and especially to the elements of claim 1 regarding storing security information in memory and the authentication function.

[310] Claim Construction Order, page 9.

3465. Dr. Johnson asserts that the language of claim 17 of the '562 Patent that recites "compris[es] a unique identifier for said apparatus" and computer readable instructions that "caus[e] said apparatus to perform the steps of: upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network; sending by said apparatus said unique identifier to said server system; . . . receiving by said apparatus updated content from said server system; [and] displaying by said apparatus said updated content on said display screen" renders this element obvious. Johnson ¶2375.

3466. Dr. Johnson asserts that the unique identifier in claim 17 of the '562 Patent can be the claimed device authentication information in Claim 3 of the '930 Patent. Johnson ¶2376. Claim 2, from which Claim 3 depends, already recites "wherein said authentication function is further configured to provide said unique identifier of said digital display apparatus to said first remote server system." '930 Patent at Claim 2. Therefore, in light of the principles of claim differentiation, Claim 3 must be referring to device authentication information other than the unique identifier, and thus Dr. Johnson has failed to show this element.

3467. For at least these reasons, in my opinion, claim 3 of the '930 Patent is valid over claim 17 of the '562 Patent.

4. Claim 4

i. [4.] The digital display apparatus of claim 1, wherein said onboard software further comprises an initialization function configured to prompt said first remote server system to associate a record with said digital display apparatus.

3468. Claim 4 is valid for the same reasons as described above with respect to claim 1. As also explained above, the specific onboard software structure recited in claim 1 of

the ’930 Patent is patentably distinct from claim 17 of the ’562 Patent. Claim 4 further recites this onboard software structure includes the recited initialization function.

3469. Dr. Johnson asserts that the language of claim 17 of the ’562 Patent that recites “computer readable instructions different from said content for controlling the operation of said apparatus,” and “compris[e] instructions for causing said apparatus to perform the steps of . . . prompting by said apparatus a user of said apparatus to create an account at said server system” renders this element obvious. Johnson ¶2377.

3470. Dr. Johnson further states:

> In my opinion, a POSITA would have recognized and found obvious that the purpose of prompting the user to create an account at the server system would be to enable the server system to associate a record (e.g., the account) with the apparatus. For example, a POSITA would have recognized that the record/account could include information about the apparatus, such as the unique identifier, and be used to identify the apparatus and provide content for display. See above (e.g., Sections XIV.B.1(g), XIV.B.2(a), XIV.B.3(a)). and “Moreover, because the computer readable instructions (i.e., the onboard software) cause the apparatus to prompt the user to create the account, a POSITA would have recognized that the instructions could similarly prompt the server to associate the record with the apparatus (e.g., after the user has provided any necessary account creation information). A POSITA would have recognized these steps as comprising an initialization function.

Johnson ¶2378.

3471. However, although they may both be associated with account creation, prompting said first remote server system to associate a record with said digital display apparatus, and prompting by said apparatus a user of said apparatus to create an account at said server system, are very different steps in which, as one example, the apparatus is communicating with different entities: the user vs. the server. Dr. Johnson seeks to cure this by referring to Hoyle and Windows 98. Johnson ¶2379-82. However, as described in detail above, Hoyle and Windows 98 are non-analogous art that are not reasonably pertinent. Further, a POSITA would not have been motivated to combine Hoyle or Windows 98 with claim 17 of the ’562 Patent.

3472. Dr. Johnson states: "a POSITA would also have recognized and found it obvious to incorporate the client registration techniques of Hoyle and Windows 98, which comprise an initialization function configured to prompt the server to associate a record with the digital display apparatus, into the apparatus of claim 1 because it would allow for identification and maintenance of the specific apparatus and ensure that the server delivers the correct image data to the correct apparatus. This combination is no more than a combination of prior art elements according to known methods to yield predictable results and a simple substitution of one known element for another to obtain predictable results." Johnson ¶2382.

3473. Dr. Johnson states that:

> Hoyle discloses that the server 22 may "assign[] a unique ID to [a] user and then store[] that ID along with the received demographic data . . . in the user/demographics data base 46." Hoyle at 25:17-21. User registration "allows for identification and maintenance of the specific installation by the computer from which the user is working" and "identifies and captures data about the user reflecting information including user identity, computing environment and usage, and user demographic profile." Id. at 33:57-62; see also id. at 12:52-56, 25:50-56, 26:49-27:5, 27:25-32, 34:14-21.

Johnson ¶2380.

3474. I note again here that the '930 Patent provides that:

> The initialization process begins at step 800 when the frame device is connected to a power Source and a communication medium such as a telephone line or network connection. The frame device may be configured to automatically connect via a wireless connection or the user may manually couple it to a power source and communication medium.
>
> . . .
>
> At step 805, the data repository is analyzed to determine whether there is a record for the frame device initiating the connection. If a record for the frame device is not located, step 807 executes and an image prompting the user to create a picture box account associated with that frame device is displayed to the user.
>
> . . .

> Once the picture box is obtained, step 813 executes, at step 813 the behavior characteristics of the frame device is determined. The behavior characteristics may be established by default or customized according to the user's preferences. When the behavior characteristics are determined, step 815 executes. At step 815, the invention contemplates loading the behavior characteristics into the data repository for use by the frame device.

'930 Patent at 23:59-65, 24:9-16, 24:39-46.

3475. Therefore, the initialization function as described, for example, in this portion of the '930 Patent refers to an automatic initialization process carried out by the display apparatus to ensure the user has a record associated with the remote server system, which is not disclosed in Hoyle. Hoyle specifies that it creates and stores a user profile "when a user first accesses client application 10." Hoyle at 11:65-12:44.

3476. Similarly, as I discussed with respect to claim 1 of the '930 Patent, Windows 98 required users to manually perform actions, such as the "click to update Wizard" action that Dr. Johnson himself relies on. Johnson ¶2199 (citing Win98 at 292, 294, FIG. 16.5). Thus, the update process of Windows 98 also runs contrary to the disclosure of the Patents-in-Suit.

3477. For at least these reasons, in my opinion, claim 4 of the '930 Patent is valid over claim 17 of the '562 Patent.

5. Claim 5

i. [5.] The digital display apparatus of claim 1, wherein said digital display apparatus is configured to display an account initialization message.

3478. In my opinion, claim 5 of the '930 Patent is valid over claim 17 of the '562 Patent for the same reasons as described above with respect to claim 1 of the '930 Patent.

6. Claim 6

i. [6.] The digital display apparatus of claim 5, wherein said account initialization message prompts a user to create an account with said first remote server system.

3479. In my opinion, claim 6 of the ’930 Patent is valid over claim 17 of the ’562 Patent, for the same reasons as described above with respect to claim 1, as well as claim 5 of the ’930 Patent.

7. Claim 7

i. [7] The digital display apparatus of claim 1, wherein said memory comprises a connection timing parameter that indicates a timing interval for said digital display apparatus to automatically initiate periodic connections with said first remote server system.

3480. Claim 7 is valid for the same reasons as described above with respect to claim 1.

3481. Dr. Johnson asserts that the language of claim 17 of the ’562 Patent that recites “caus[e] said apparatus to perform the steps of: upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network; . . . receiving by said apparatus updated computer readable instructions for controlling the operation of said apparatus from said server system; updating by said apparatus said computer readable instructions in said memory with said updated computer readable instructions; [and] receiving by said apparatus updated content from said server system” renders this element obvious. Johnson ¶2391.

3482. Dr. Johnson refers to elements of claim 17 directed, to upon connection to a power source and a communications source, initiating by said apparatus a communications session with said server system via said communications network, and asserts that a POSITA would have found it obvious to include a “connection timing parameter” in the memory of a digital display apparatus to achieve this functionality. Johnson ¶2391-94. However, nothing in claim 17 of the ’562 Patent

suggests using specifically a connection timing parameter stored in memory of a digital display apparatus to accomplish this.

3483. Recognizing this deficiency, Dr. Johnson refers to Criss, Hoyle, and Nishiyama. Johnson ¶¶2396-2402. However, as described in detail above, a POSITA would not have been motivated to combine Criss, Hoyle, or Nishiyama with the claims of the Patents-in-Suit. Additionally, Dr. Johnson cites to Hoyle as disclosing:

> Once a group of banners have been displayed their allotted number of times, timer/display component 110 notifies flag alert component 112, which sets a new banner flag. This flag is checked periodically and if set, ADM server 22 is accessed to download new banner advertising.

Hoyle at 18:55-59.

3484. While Hoyle discloses downloading new banner advertising when banners have been displayed an allotted number of times and a flag is set, Hoyle does not disclose a connection timing parameter indicating *a timing interval* that initiates periodic connections with a server, nor specifically a timing parameter stored in memory. This claim element is not obvious.

3485. For at least these reasons, in my opinion, claim 7 of the '930 Patent is valid over claim 17 of the '562 Patent.

8. Claim 8

i. [8.] The digital display apparatus of claim 1, wherein said memory comprises an image display parameter comprising a timing interval for periodically selecting an image data file from said memory for rendering on said display region.

3486. In my opinion, claim 8 of the '930 Patent is valid over claim 17 of the '562 Patent for the same reasons as described above with respect to claim 1.

9. Claim 15

3487. Dr. Johnson simply refers to his arguments concerning Claim 1 and its dependent claims for Claim 15. Johnson ¶¶2429-51. The elements of Claim 15 are valid for the same reasons as Claims 1 and 5 of the ’930 Patent discussed above.

C. The asserted claims of the ’656 Patent are not invalid over claim 18 of the ’573 Patent.

3488. The differences between each of claims 1-18 of the ’656 Patent and claim 18 of the ’573 Patent are readily apparent based on a comparison of these claims. For example, claim 1 of the ’656 Patent recites a display device for displaying image data received from a server system that includes:

> a central processing unit;
>
> a display screen for displaying said image data;
>
> a communications interface configured to communicate via a communications network;
>
> a memory comprising computer readable instructions for controlling the operation of said display device, said computer readable instructions for controlling the operation of said display device comprising instructions for causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system, said communications session comprising the steps of:
>
> sending a request for image data to said server system via said communications network;
>
> receiving image data and authentication information from said server system in response to said request;
>
> authenticating said server system;
>
> storing said received image data in said memory;
>
> displaying said image data on said display screen;
>
> receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network;

automatically updating said computer readable instructions for controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device;

said computer readable instructions for controlling the operation of said display device further comprising instructions for causing said display device to instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device.

3489. Claim 18 of the ’573 Patent is a system claim that recites the nature in which a digital picture frame and at least one server system communicate, but, as further explained below, claim 18 does not include, at the least, several of the elements recited in claim 1 of the ’656 Patent shown above. For at least these reasons, the claims of the ’656 Patent are patentably distinct from claim 18 of the ’573 Patent.

1. Claim 1

i. [1.a] a central processing unit;

3490. Dr. Johnson asserts that the language of claim 18 of the ’573 Patent that recites “=A system for distributing image data comprising: at least one digital picture frame comprising memory and operating system software located inside said digital picture frame configured to operate according to preferences comprising an image display list defined by a user; said at least one digital picture frame comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs” renders these elements obvious. Johnson ¶2463. Dr. Johnson further asserts that, although Claim 18 of the ’573 Patent does not disclose “a central processing unit,” it would be obvious based on that claim 18 of the ’573 Patent recites operating system software that the frame device would have a central processing unit to execute the operating system software. Johnson ¶¶2464-65.

3491. However, Claim 1 of the ’656 Patent recites a different structure—a central processing unit—than what is claimed in the ’573 Patent. Although claim 18 of the ’573 Patent

recites operating system software, nothing in the claim language of claim 18 of the ’573 Patent suggests “a central processing unit.” Recognizing this deficiency, Dr. Johnson turns to the specification of the ’573 Patent. However, the specification of the ’573 Patent can only be used for understanding claim terms, not to assert that an unclaimed feature in the ’573 Patent of a central processing renders claim 1 of the ’656 Patent invalid.

3492. For at least these reasons, in my opinion, claim 1 of the ’656 Patent is valid over claim 18 of the ’573 Patent.

ii. [1.c] a communications interface configured to communicate via a communications network;

3493. Dr. Johnson asserts that the language of claim 18 of the ’573 Patent that recites “said at least one server system coupled to said at least one digital picture frame via said network, wherein said at least one server system is configured to generate package data comprising said image data and said preferences and to periodically relay said package data comprising said image data and said preferences to at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences” renders this element obvious. Johnson ¶2477.

3494. However, claim 18 does not recite the specific communications interface, as recited in claim 1 of the ’656 Patent. The broad disclosure of the ’573 Patent that the digital picture frame communicates with a server does not teach or suggest the specific structure recited in the ’656 Patent. This claim element is not obvious for at least these reasons.

3495. Apparently recognizing this deficiency, Dr. Johnson relies on portions of Bandaru, which disclose a digital media frame (DMF) that includes “an interface circuit” having “at least one receiving port capable of identifying various types of networking protocols that are used to

transfer the image data," that is operated using a processor. Johnson ¶2480. Dr. Johnson asserts that Bandaru's "interface circuit" *could* be located in an integrated housing and "would protect the network interface from damage, save space, and make use of the network interface more convenient among other advantages." Johnson ¶¶2481-82. These reasons are not disclosed in either the '573 Patent claims or Bandaru; Dr. Johnson merely offers vague reasons to combine the '573 Patent and Bandaru. Moreover, as discussed above, Bandaru is not "prior art."

3496. For at least these reasons, in my opinion, claim 1 of the '656 Patent is valid over claim 18 of the '573 Patent.

iii. [1.e] said computer readable instructions for controlling the operation of said display device comprising instructions for causing said display device, upon connection to a power source and a communications source and prior to receiving any input from a user, to automatically initiate a communications session with said server system, said communications session comprising the steps of:

3497. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "at least one digital picture frame comprising memory and operating system software located inside said digital picture frame configured to operate according to preferences comprising an image display list defined by a user" and "said at least one server system coupled to said at least one digital picture frame via said network, wherein said at least one server system is configured to generate package data comprising said image data and said preferences and to periodically relay said package data comprising said image data and said preferences to at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences" renders this element obvious. Johnson ¶¶2486-87.

3498. Dr. Johnson asserts: "a POSITA would have understood and found obvious that the automatically initiated communications with the server system occur when the digital picture frame is connected to a power source and a communications source (e.g., the communications network discussed above) and that because the communications are initiated 'automatically,' they may occur prior to receiving input from a user" and that "a POSITA would have understood and found obvious that the operating system software (computer readable instructions) of the digital picture frame cause the frame to automatically initiate the communications session with the server system." Johnson ¶2488-89.

3499. However, claim 1 of the '656 Patent recites that the display device initiate a communications session that "comprising the steps of:" indicating that the automatically initiated communications session includes multiple recited steps, as shown in reproduced claim 1 above. Claim 18 of the '573 Patent, however, recites that a request for current package data is issued after initiating communications, but does not recite all the other steps recited in claim 1 of the '656 Patent as being a part of a communications session. Also, claim 1 of the '656 Patent requires specifically that the communications session is "upon connection to a power source and a communications source," and, although Claim 18 of the '573 Patent indicates that requests are made automatically to the server, this does not reach the specific claim language of "upon connection to a power source and a communications source." Dr. Johnson thus fails to consider claim 1 as a whole. This claim element is not obvious for at least these reasons.

3500. Recognizing this deficiency, Dr. Johnson turns to the specification of the '573 Patent and attempts to read language from the specification into claim 18 of the '573 Patent. However, I again reiterate my understanding that the specification of the '573 Patent can only be used for understanding claim terms, not to assert an unclaimed feature

in the '573 Patent of communications occurring "upon connection to a power source and a communications source" renders claim 1 of the '656 Patent invalid.

3501. For at least these reasons, in my opinion, claim 1 of the '656 Patent is valid over claim 18 of the '573 Patent.

iv. [1.f] sending a request for image data to said server system via said communications network;

3502. Claim 1 of the '656 Patent recites that the display device "initiate a communications session with said server system" that "compris[es] the steps of: . . . sending a request for image data to said server system via said communications network." This alone is a patentably distinct feature of claim 1 of the '656 Patent, the recited steps are all part of the initiated communications session. Dr. Johnson does not address this in his report. *See* Johnson ¶¶2491-92.

3503. For at least these reasons, in my opinion, claim 1 of the '656 Patent is valid over claim 18 of the '573 Patent.

v. [1.g] receiving image data and authentication information from said server system in response to said request;

3504. Claim 1 of the '656 Patent recites that the display device must "initiate a communications session with said server system" that "compris[es] the steps of: . . . receiving image data and authentication information from said server system in response to said request." This alone is a patentably distinct feature of claim 1 of the '656 Patent, as the recited steps are all part of the initiated communications session. Dr. Johnson does not address this in his report. *See* Johnson ¶¶2493-2505.

3505. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "said at least one server system coupled to said at least one digital picture frame via said network, wherein said at least one server system is configured to generate package data comprising said image data and said preferences and to periodically relay said package data comprising said image

data and said preferences to at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences, wherein said at least one digital picture frame is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in said memory" renders this element obvious. Johnson ¶2493.

3506. However, claim 18 recites how a server is configured to generate package data, while, with respect to receiving image data, claim 1 of the '656 Patent recites the operation of the display device. Additionally, nothing in this recitation of claim 18 suggests it would be obvious for a display device to receive authentication information from a server system. Claim 18 only recites authenticating a server system, but not the specific recitation of receiving authentication information as recited in claim 1 of the '656 Patent.

3507. Apparently recognizing this deficiency, Dr. Johnson takes the position that Elgamal or RFC 2246, in combination with claim 18 of the '573 Patent, render this element obvious. Johnson ¶¶2498-2505.

3508. But, as I have explained in this report, although Elgamal (SSL) and TLS may have been known at the time, that does not guarantee their use in systems or by devices such as the display device recited in the '656 Patent claims. Dr. Johnson spends a few paragraphs discussing these technologies, describing that they involve establishing secure connections between clients and servers using a security handshake and certificates. Johnson ¶2499-03. Dr. Johnson then states: "A POSITA would have found it obvious to incorporate the secure communication techniques of Elgamal and RFC 2246 into the digital picture frame of claim 18 because it would allow for the

secure distribution of image data and other digital content. A POSITA would have found it obvious to use the authentication techniques described in Elgamal and RFC 2246 to prevent malicious activities and allow the digital picture frame to ensure it is communicating with the correct server before downloading content from that server." Johnson ¶2505.

3509. However, SSL and TLS were both computationally intensive tasks that require what in 1999 would have been an extensive amount of processing power. For example, an article from 2004 noted that, even in 2004, use of SSL and TLS were not obvious for resource-constrained devices, such as the display device of the '656 Patent (e.g., devices other than powerful desktop computers).[311] The article explains, especially for implementing client-side SSL authentication of servers, "developing SSL implementations for smaller embedded systems is no small challenge, since there is no 'embeddedSSL' protocol," and because "encryption operations are expensive, both in terms of processor cycles and memory usage."[312] Given those challenges still existed in 2004, it would not be obvious to simply "throw in" SSL or TLS as Dr. Johnson suggests.

3510. Furthermore, TLS and Elgamal both rely on digital certificates. Such certificates are discussed 118 times in Elgamal. RFC 2246 (TLS) section 7.4.2 is directed to server certificates, and section 7.4.6 is directed to client certificates. More specifically, these are X.509 digital certificates.

3511. RFC 2246, for example, states: "The certificate type must be appropriate for the selected cipher suite's key exchange algorithm, and is generally an X.509v3 certificate. It must contain a key which matches the key exchange method, as follows. Unless otherwise specified, the signing algorithm for the certificate must be the same as the algorithm for the certificate key.

[311] https://www.embedded.com/implementing-ssl-on-8-bit-micros/

[312] *Id.*

Unless otherwise specified, the public key may be of any length." RFC 2246 at 37-38. Elgamal also describes using X.509 certificates. Elgamal at 30:15-35.

3512. Dr. Johnson does not address how the systems/devices of the '656 Patent would be modified to store and present digital certificates for authentication. Implementing digital certificates requires multiple steps. One of the first is purchasing digital certificates. Then, one must determine where server certificates would be stored. Dr. Johnson does not discuss the steps to implement this.

3513. Dr. Johnson states this "would be a combination of prior art elements according to known methods to yield predictable results and a simple substitution of one known element for another to obtain predictable results." Johnson ¶2121. This is incorrect as I explained above. Dr. Johnson does not address the many steps needed to implement digital certificates. A combination of claim 18 of the '573 Patent with Elgamal or TLS would not be simple or obiouss, especially as a resource constrained device.

3514. For at least these reasons, in my opinion, claim 1 of the '656 Patent is valid over claim 18 of the '573 Patent.

vi. [1.h] authenticating said server system;

3515. Claim 1 of the '656 Patent recites that the display device "initiate a communications session with said server system" that "compris[es] the steps of: . . . authenticating said server system." This alone is a patentably distinct feature of claim 1 of the '656 Patent, as the recited steps are all part of the initiated communications session. Dr. Johnson does not address this in his report. *See* Johnson ¶2506-08.

3516. For at least these reasons, in my opinion, claim 1 of the '656 Patent is valid over claim 18 of the '573 Patent.

vii. [1.i] storing said received image data in said memory;

3517. Claim 1 of the ’656 Patent recites that the display device “initiate a communications session with said server system” that “compris[es] the steps of: . . . storing said received image data in said memory.” This alone is a patentably distinct feature of claim 1 of the ’656 Patent, as the recited steps are all part of the initiated communications session. Dr. Johnson does not address this in his report. *See* Johnson ¶2509.

3518. For at least these reasons, in my opinion, claim 1 of the ’656 Patent is valid over claim 18 of the ’573 Patent.

viii. [1.j] displaying said image data on said display screen;

3519. Claim 1 of the ’656 Patent recites that the display device “initiate a communications session with said server system” that “compris[es] the steps of: . . . displaying said image data on said display screen.” This alone is a patentably distinct feature of claim 1 of the ’656 Patent, as the recited steps are all part of the initiated communications session. Dr. Johnson does not address this in his report. *See* Johnson ¶¶2510-2513.

3520. For at least these reasons, in my opinion, claim 1 of the ’656 Patent is valid over claim 18 of the ’573 Patent.

ix. [1.k] receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network; [1.l] automatically updating said computer readable instructions for controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device;

3521. Claim 1 of the ’656 Patent recites that the display device “initiate a communications session with said server system” that “compris[es] the steps of: . . . receiving updated computer readable instructions for controlling the operation of said display device from said server system via said communications network; automatically updating said computer readable instructions for

controlling the operation of said display device with said updated computer readable instructions for controlling the operation of said display device." This alone is a patentably distinct feature of claim 1 of the '656 Patent, as the recited steps are all part of the initiated communications session. Dr. Johnson does not address this in his report. *See* Johnson ¶2514-31.

3522. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "at least one digital picture frame comprising memory and operating system software located inside said digital picture frame" renders this element obvious. Johnson ¶¶2514, 2528.

3523. As indicated by this cited claim language, Claim 18 of the '573 Patent does not recite any elements concerning updating software. Recognizing this deficiency, Dr. Johnson asserts that this language of claim 18 of the '573 Patent renders this claim element obvious in combination with Kikinis, Hoyle, Nishiyama, Windows 98, Criss, or Kottapurath. Johnson ¶¶2515-31.

3524. I first note that, to try to show obviousness based on claim 18 of the '573 Patent, Dr. Johnson is combining three or more prior art references with claim 18 of the '573 Patent. It is apparent that Dr. Johnson is resorting to hindsight bias reasoning, piecing together disparate references. Although I disagree that the cited references lend themselves to being readily modifiable in the manner asserted by Dr. Johnson, the mere fact that the prior art *may* be modified in the manner suggested by Dr. Johnson does not make the modification *obvious* without the prior art suggesting the desirability of the modification. As I have noted in this report, the prior art references have various deficiencies, and Dr. Johnson appears to be using the Patents-in-Suit simply as a roadmap to modify and combine disparate portions of the references in a manner to attempt to arrive at the claimed limitation.

3525. Dr. Johnson asserts that Kikinis discloses:

> Kikinis discloses a service, including an apparatus and software, "that enables users who have purchased an Internet appliance such as a WEB phone, for example, to obtain third-party assistance in setting-up and configuring the device for successful operation." Kikinis at 4:22-27. "Such Internet appliances include any device that is used for accessing and operating on the Internet, or other types of switch-packet networks that may stand alone or be linked to the Internet. Examples are WEB phones, WEB TV's, Palm-top computers, Internet capable cell phones, Laptop computers, and so on." *Id.* at 4:43-48. When "a user plugs in a specific Internet appliance . . . and insures that all hardware and connections are correct . . . the user calls or the appliance dials after obtaining the users permission (not shown) a 1-800, a 1-900, or other specific dial-up number provided (typically by appliance vendor) with the appliance purchased. The appliance is then connected to server 21." *Id.* at 8:22-29. The server then communicates with the Internet appliance to perform set-up operations, which may include software updates. *Id.* at 8:41-60, 6:26-35.

Johnson ¶2519.

3526. First, Kikinis is not analogous art. Kikinis is not in the same field of endeavor as the Patents-in-Suit. Kikinis is directed to a setup routine for devices like "web phones" to obtain network settings. *See* Kikinis at 4:65, FIG. 1. Also, as shown above, Kikinis discloses that a device can call a 1-800 number to get assistance, but only when a user performs the call, or when a user gives permission for the device to perform the call. Kikinis thus does not disclose an automatic process. Dr. Johnson, recognizing this, essentially says that it would be "obvious that obtaining the user's permission could be omitted." Johnson ¶915. There is no suggestion in Kikinis to omit how Kikinis is disclosed to operate, and Dr. Johnson appears to only state it would be obvious to do so based on hindsight, neither of which is a proper motivation to modify Kikinis.

3527. Also, the portions of Kikinis cited by Dr. Johnson (8:41-60, 6:26-35) do not disclose receiving updated computer readable instructions and automatically updating said computer readable instructions:

> Server 21 has an optional capability of accessing the Internet (27) as illustrated via data link 33. In a preferred embodiment, server 21 maintains a constant Internet connection adapted to allow server 21 to navigate to and communicate with other known servers, such as vendor servers, from where additional software and data may be acquired as needed that may not be immediately on-hand. However, this is

> not required to practice the present invention, but rather a convenience. Having Internet connection also allows participating vendors to up-load updated routines and possibly exchange information about users. It also allows the offering of new software to existing, already set up users, by letting their appliances receive such indication, or in case of non-info appliances, letting the user know by other means, such as e-mail, fax, mail etc., or by having the appliance look up and possibly connect to the server in certain, periodic, pre-programmed or flexible intervals. Also, some reporting of users activities may happen then, in order to offer better, more suitable services and functions.

Kikinis at 6:18-37.

3528. As shown above, Kikinis merely mentions that software updates can be "offered" to users, such as via sending an email. Dr. Johnson has not shown that Kikinis is reasonably pertinent nor that Kikinis can be combined with claim 18 of the '573 Patent to meet these claim elements.

3529. Further, it should be also noted that none of Nishiyama, Criss, and Kottapurath are in the same field of endeavor as the Patents-in-Suit: personal digital display devices. If a reference is not in the same field of endeavor, it can only be considered analogous art if the reference is reasonably pertinent to the problem faced by the inventor. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital display devices required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were inadequate for the automated digital display device design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See, e.g.*, '573 Patent at 2:15-22, 5:11-35, 6:14-24. None of these references are pertinent to these issues.

3530. Dr. Johnson then turns his attention to Kottapurath. Johnson ¶2520. Kottapurath's USPTO classification is 713/2 ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: SUPPORT. Subclass 2 is loading initialization program (e.g., booting, rebooting, warm booting, remote booting, BIOS, initial program load (IPL), bootstrapping). Specifically, Kottapurath is directed to updating software on a PC. *See* Kottapurath at Abstract, 2:22-29. The device and server in Kottapurath have very specific requirements. This is first shown in figure 1 of Kottapurath:

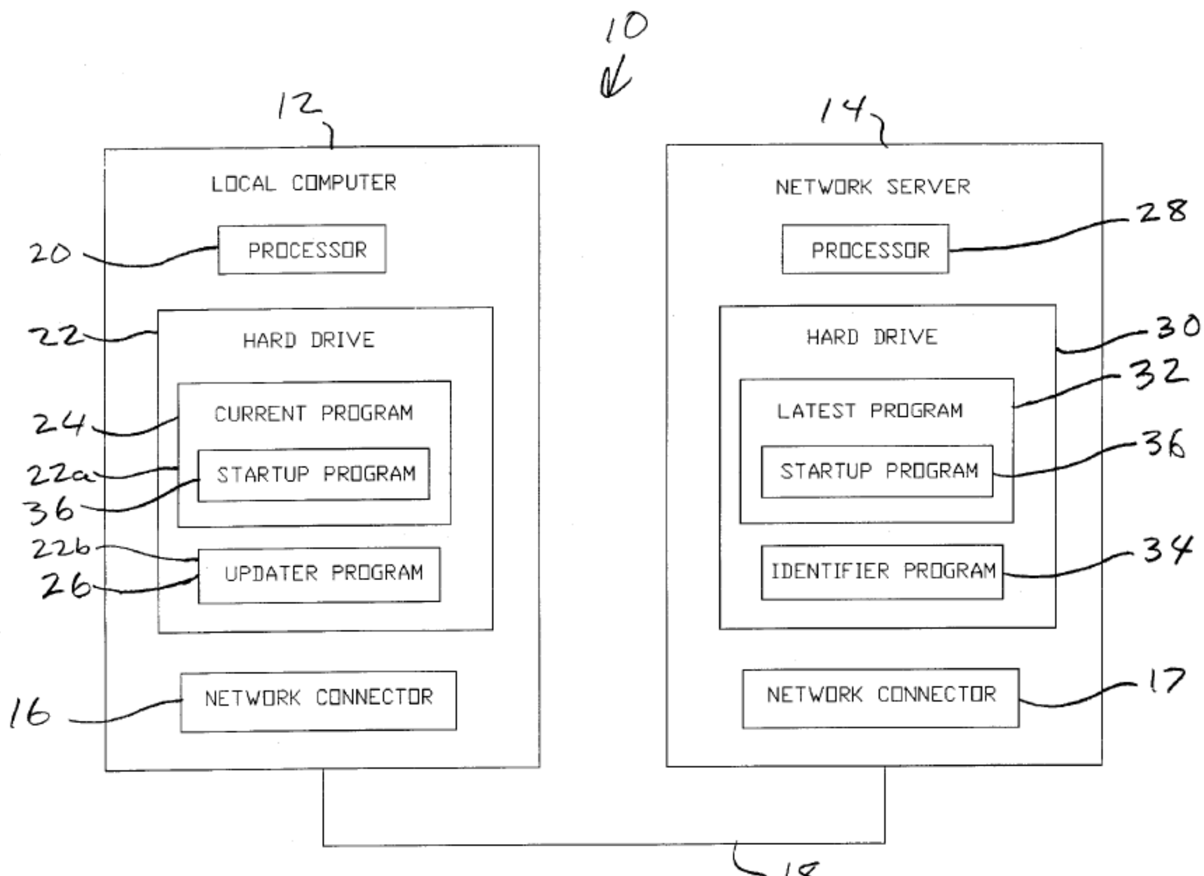

Fig. 1

3531. A POSITA would recognize that a specific updater program is needed on the device, and the server will need a specific identifier program. Dr. Johnson does not indicate how to combine these elements. Figure 3 of Kottapurath shows the process:

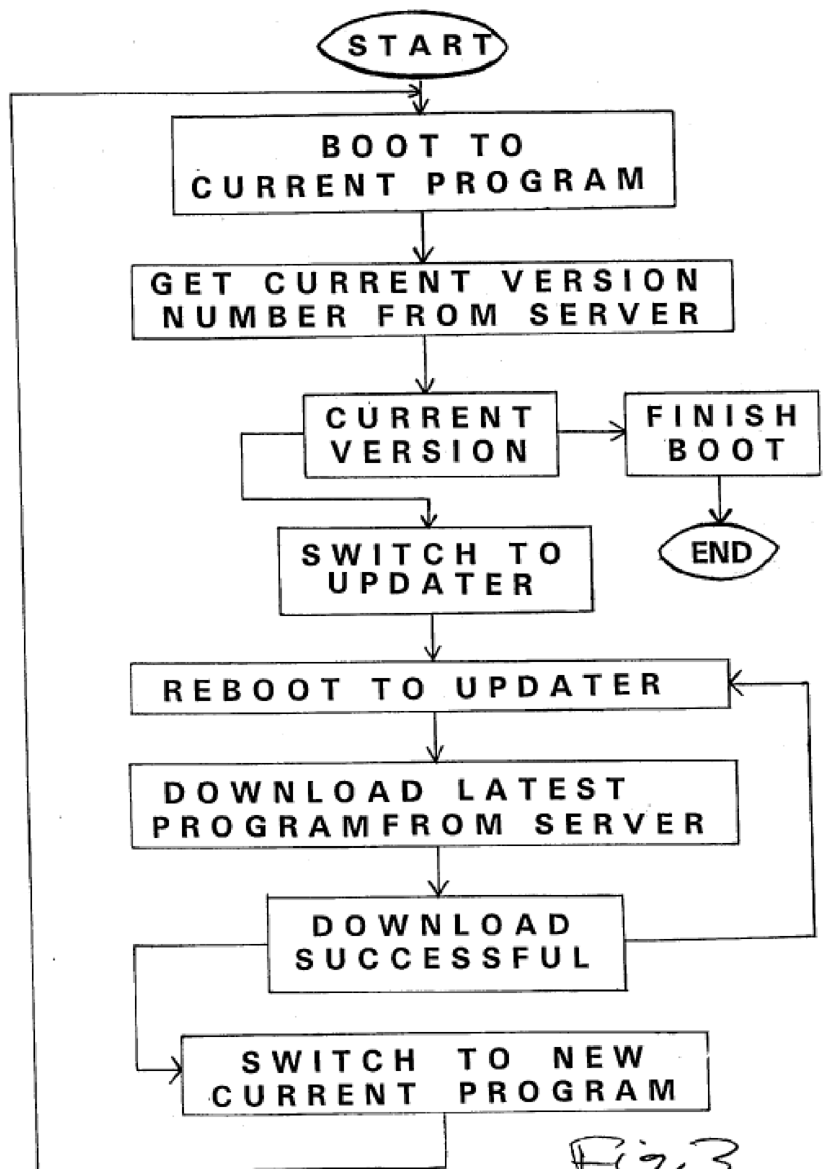

Fig. 3

3532. Regarding Hoyle, a POSITA would not have combined Hoyle with claim 18 of the ’573 Patent. As explained by the Patent Trial and Appeal Board (PTAB) during *inter partes* reexamination of the ’573 Patent:

> With respect to claim 13, the Requester has not provided a reason for one skilled in the art to combine the teachings of Hoyle with the teachings of Muoio, Bitetto, and Moon. Hoyle's discussion of the prior art suggests that any updating of the software is needed because of a need to update advertising information in the client (see Hoyle, column 2, lines 6-21); however, the invention of Muoio, Bitetto, and Moon does not have any advertising that would need updating. Since Hoyle's teachings therefore do not appear to be addressing a problem associated with Muoio, Bitetto, and Moon, it would not be obvious to combine the four teachings together.[313]

3533. The PTAB agreed that there was no reason to combine Muoio, Bitetto, and Moon with Hoyle. The PTAB also stated it agreed that Hoyle does not disclose "obtaining an update" within the context of the claims of the Asserted Patents. *Id.*

3534. Hoyle is also not analogous art to the Asserted Patents. Hoyle is directed to providing banner advertisements in a web browser.

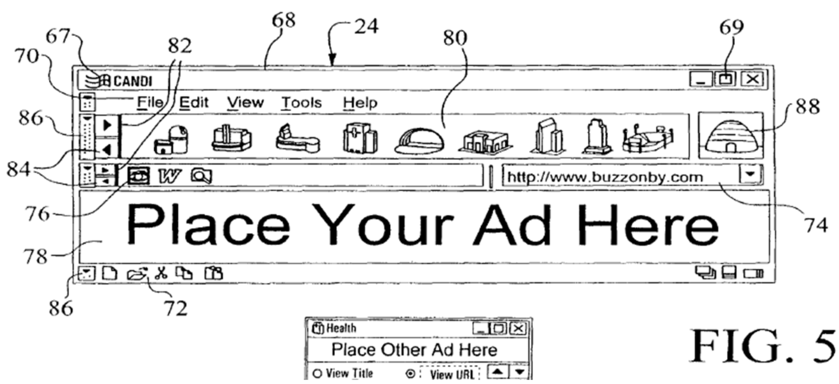

FIG. 5

3535. The Asserted Patents are in the field of consumer digital display devices.

3536. Additionally, the Hoyle reference is not reasonably pertinent. The Asserted Patents explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, that other systems such as electronic mail systems required a user "know how to navigate around the operating system and use the program," and that existing client-server transmission techniques, such as client pull and server push techniques, were

[313] PTAB Decision on Appeal dated January 4, 2013, at 25-27 (quoting the Examiner).

inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See e.g.*, ’930 Patent 2:20-27, 3:35-40, 5:10-33, 6:12-21. Hoyle does not address these problems, as Hoyle is primarily concerned with providing non-user selected banner advertisements (i.e., any advertising content, not specific content intended for or associated with a particular device) for display in a user’s web browser (ADM server 22 handles “advertising selection”). Hoyle at 12:24-25.

3537. Hoyle describes an “automatically upgradeable software application,” Hoyle at Abstract, that runs on a “conventional personal computer.” Hoyle at 7:14-15. The software program is intended to deliver targeting advertising to the user. “The software application includes programming that accesses the server on occasion to determine if one or more components of the application need upgrading to a newer version. If so, the components are downloaded and installed without requiring any input or action by the user.” Hoyle at Abstract (emphasis added). Hoyle’s “software application 10” has two “modules”—a “graphical user interface (GUI) program module 12” and an “advertising and data management (ADM) program module 14”—which together “act as a single software application.” Hoyle at 6:62-67. Further, Hoyle expressly states that the computer that runs Hoyle’s GUI and ADM modules have separate operating system software such as, for example, Windows 98 or Windows NT, stating:

> In general, GUI module 12 contains the basic programming necessary to provide a user interface to the computer's software applications and operating system (e.g. Windows98 or WindowsNT

Hoyle at 7:6-9 (emphasis added).

3538. The GUI and ADM software applications of Hoyle are not operating system software. Clearly, the GUI and ADM of Hoyle are client software application programs distinct

from operating system software, and that in fact depend on conventional computer operating system software, such as Windows 98 or Windows NT, to operate.

3539. Hoyle does not disclose any embodiments pertaining to updating operating system software. In fact, Hoyle is directed to updating only particular portions of application software, stating that "one problem with these currently available programs is that these parameters can only be changed by replacement of an entire program with an updated, revised version, making it difficult to respond to desired changes in advertising approaches." Hoyle at 2:29-33. Hoyle thus teaches away from obtaining a software update and replacing a previous program with the new version.

3540. A POSITA would therefore not be motivated to combine claim 18 of the '573 with Hoyle, and the Hoyle does not provide for obtaining an updated version of said onboard software from said server and to replace said current version of said onboard software in said memory with said updated version, as claimed in claim 1 of the '656 Patent.

3541. Dr. Johnson fails to provide valid and reasonable reasons why Hoyle is relevant to the Asserted Patents now—when the examiner and the PTAB did not consider it relevant previously. Hoyle is therefore deficient to provide this element of the claims, and relying on Hoyle is duplicative of issues already decided during reexamination.

3542. Dr. Johnson next discusses Nishiyama. Johnson ¶2522. However, the very section that Dr. Johnson points to in Nishiyama belies his interpretation. Dr. Johnson points to "Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20." Nishiyama at 36:6-8. This portion of Nishiyama states:

> 1-3-5. Remote Maintenance of Software of Terminal System 30 1. Software of the terminal system 30 can be updated, be maintained, be installed, and be modified for changing settings thereof via remote control from the server PC 20.
>
> Note: when commercially-available remote-access software is used, terminal systems 30 for installing software can be specified.

Nishiyama at 36:4-11.

3543. Nishiyama thus similarly discloses that remote maintenance can be performed on terminal systems by installing, modifying, updating, and maintaining the software via the network under control of the server using "commercially-available remote-access software." Nishiyama at 36:4-11. However, while Nishiyama discloses that software of terminals can be remotely updated, Nishiyama states this is done using "remote-access software," indicating software updates are installed from the server using such remote-access software. However, this claim element recites that the display apparatus obtains an update for its onboard, indicating it initiates the request, not that the server remotely accesses the display apparatus to install updates.

3544. Also, as I explain throughout this report, Nishiyama is in the field of *Interactive Video Distribution Systems*,[314] and is not analogous art. Nishiyama is not in the same field of endeavor as the Patents-in-Suit because Nishiyama is directed to providing advertisements to public billboards. The Patents-in-Suit are in the field of consumer digital display devices. The disclosure of Nishiyama would not have logically commended itself to an inventor's attention in considering his problem.

3545. The Patents-in-Suit explain that the problems faced by the inventors were that existing digital picture frames required manual operation and loading of images, and that existing client-server transmission techniques, such as client pull and server push techniques, were

[314] https://www.uspto.gov/web/patents/classification/uspc725/defs725.htm

inadequate for the automated digital picture frame design they were trying to achieve, partly because such techniques required requests for specific content from the client device, or because these techniques did not ensure only certain content was received by particular client devices. *See e.g.*, '930 Patent 2:20-27, 5:10-33, 6:12-21. Nishiyama does not address these problems, as Nishiyama is primarily concerned with providing advertisements for display on digital billboards according to a schedule to reduce the duration of transmissions and to avoid transmitting during heavy load times. Nishiyama at 4:31-45, 13:40-61.

3546. Being in completely different fields, it is unlikely that a POSITA would look to Nishiyama. Furthermore, a POSITA, as defined by Dr. Johnson, would very likely not be a POSITA in regard to Nishiyama. Dr. Johnson defined a POSITA as a person with "a bachelor's degree in Computer Science or in Electrical and Computer Engineering and two years of experience in that technology," i.e., "the area of computer networking and distributed system application programming." Johnson ¶18. Nothing in Dr. Johnson's description suggests any skill in Interactive Video Systems—the primary field of Nishiyama. Contrary to what Dr. Johnson asserts, not only would a POSITA not have been motivated to combine Nishiyama and claim 18 of the '573 Patent, but it is also quite likely that a POSITA, as defined by Dr. Johnson, would not have been able to.

3547. Regarding Windows 98, Dr. Johnson states:

> Moreover, the Windows 98 system includes a Windows Update Wizard, "a database maintained by Microsoft that contains drivers, system utilities, and other software. This gives you one convenient place on the Internet to check to see if there are Windows 98 updates available for your system." See *Using Windows 98* at 292-93. The Update Wizard "scan[s] the Internet for updated system files," and, "As updates are found, the wizard refreshes the screen and the list of files available for update." Id. The user may then "Click on Install to install the file." Id.; see also id. at FIGS. 16.1-16.4; see also id. at 500, 979, FIG. A.10.

Johnson ¶2524.

3548. Again, this claim element requires the digital display apparatus to obtain software updates independently and without having to specifically request the required data. Meanwhile, the book *Using Windows 98 Platinum Edition*[315] has a section on updating Windows 98 that is three pages long (pages 292 to 294) with multiple steps. These steps must be executed by a user:

a. Click Start and click the Windows Update icon. Internet Explorer comes up automatically and attempts to connect to Microsoft Windows Update site shown in figure 16.1.

b. Click on Update Wizard. A registration wizard pops up if this is the first time you have used the Update Wizard (see figure 16.2). You must fill out the registration to continue. Part of the registration is to upload your configuration files to Microsoft. You can deselect a check box, so this doesn't happen if you want to.

c. The Update Wizard web page contains two options. Update and Restore. Click Update to scan the internet for updated system files. A new Internet Explorer window pops up, as shown in figure 16.3. The update Wizard loads necessary components into your system and then scans the database for updated drivers.

d. As updates are found the wizard refreshes the screen and the list of files available for update. Select a file in the list on the left to see its description as well as its size, and approximate download time on the right side of the main windows.

e. Click on Install to install the file. Only one file can be installed at a time, and your computer may need to be restarted after a file is installed. Let the computer restart if necessary before downloading a second update in order to verify that it is still working properly.

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[315] Bott, E., & Person, R. (1998). *Using Microsoft Windows 98 with Cdrom*. Que Corp.

3549. The section goes on to discuss the various problems that can arise when updating Windows 98. But even if everything goes smoothly, an operating system consists of numerous individual files and applications. Windows 98 required a user to individually download and install these one at a time, with potentially numerous pauses to restart the system. Thus, the update process of Windows 98 also runs contrary to the disclosure of the Patents-in-Suit.

3550. Dr. Johnson then turns his attention to Criss, arguing that a POSITA would combine find it obvious to use Criss' software updates. Johnson ¶2526. The USPTO primary classification for Criss is 455/418. Class 455 is Telecommunications. Subclass 418 is programming control. Like Nishiyama, this is in an entirely different field than the Patents-in-Suit. Criss is related to managing cellular networks, not to the field of consumer digital display devices. Criss also does not address the problems described in the Patents-in-Suit. Furthermore, a POSITA, as defined by Dr. Johnson, would not have any skills in telecommunications (the primary USPTO classification for Criss) or mobile devices (which are mentioned 129 times in Criss). A POSITA, as defined by Dr. Johnson, would not be able to combine Criss with anything else.

3551. Regardless, Criss describes a process in which a host computer 30 "compares the version of operating software stored within the mobile terminal 36 with the latest version of software known to be available in the FTP server 31." If the mobile terminal 36 "has a different version of operating software stored as compared to the version currently available in the FTP server 31, it is assumed that the operating software in the FTP server 31 has been upgraded since the last time the mobile terminal 36 has logged on" a host computer 30 "transmits a request to the mobile terminal 36 requesting the mobile terminal 36 to have its operating software updated." Upon receiving the request, "the mobile terminal 36 initiates an exchange with the FTP server 31 to download the latest version of operating software available." Criss at 7:32-46.

3552. This claim elements require the at least one digital display apparatus obtain software updates, but Criss discloses that a cellular device is commanded to retrieve updates from an FTP server. By contrast, the claimed digital display apparatus simply requests data from the server without needing to refer to specific files or data needed. The Patents-in-Suit state, referring to prior art systems: "[w]eb server 150 is not configured, for example, to transmit data that web server 150 determines client 127 needs (e.g. ***onboard software updates***)." *See*, *e.g.*, '930 Patent at 5:10-21 (emphasis added). In Criss, cellular devices are commanded to retrieve software updates from an FTP server, which would have required requesting particular data from the FTP server.

3553. Dr. Johnson offers no real reasons why a POSITA would add software updates to claim 18 of the '573 Patent, and instead appears to assert that one *could* theoretically modify claim 18 to include software updates. As has been pointed out, these are all in diverse fields and a POSITA as described by Dr. Johnson would not have even been skilled in most of these fields.

3554. Overall, Dr. Johnson's stated motivations to combine tend to take the position that a POSITA *could* theoretically incorporate software updates in claim 18 of the '573 Patent using one of Kikinis, Nishiyama, Criss, Kottapurath, or Windows 98 (although as indicated above, I do not agree that they necessarily could be combined), but does not provide reasons for why a POSITA *would* attempt such modifications.

3555. For at least these reasons, in my opinion, claim 1 of the '656 Patent is valid over claim 18 of the '573 Patent.

x. [1.m] said computer readable instructions for controlling the operation of said display device further comprising instructions for causing said display device to instruct said server system to create an interface accessible by a web browser for managing behavior characteristics of said display device.

3556. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "at least one digital picture frame comprising memory and operating system software located inside said digital picture frame configured to operate according to preferences comprising an image display list defined by a user, said at least one digital picture frame comprising a border region modeled to resemble a picture frame designed to circumscribe printed photographs; a user interface coupled to at least one server system via a network wherein said user interface is physically separable from said at least one digital picture frame and configured to obtain image data and said preferences from said user and provide said image data and said preferences to said at least one server system; said at least one server system coupled to said at least one digital picture frame via said network" renders this element obvious. Johnson ¶¶2514, 2528.

3557. But Claim 18 of the '573 Patent does not recite any elements concerning a display device instructing a server system to create an interface accessible by a web browser for managing behavior characteristics of said display device. Dr. Johnson only refers to portions of claim 18 of the '573 Patent that recite that the digital picture frame of claim 18 includes operating system software and is configured to operate according to preferences, and that a user interface separable from the digital picture frame is configured to obtain image data and preferences from a user. However, nothing in claim 18 recites that the digital picture frame *instructs* a server system to create an interface.

3558. Recognizing this deficiency, Dr. Johnson cites Bandaru and Stahl for these elements. However, the cited portion of Bandaru (10:44-57, 12:7-15) merely states that a DMF

network service allows a user to reconfigure a DMF, but does not describe anything regarding a display device *instructing* a server system to create an interface accessible by a web browser for managing behavior characteristics of said display device.

3559. Moreover, the cited portions of Stahl (Stahl at 4:43-54, 5:32-35, 6:3-14, 6:60-7:19) merely describe that a user can connect to an ISP via the user's PC to manually create a user profile. The user can then specify types of data to be sent to other PCs. However, Stahl does not disclose a display device that instructs a server system to create an interface accessible by a web browser for managing behavior characteristics of said display device. For example, the other PCs disclosed in Stahl do not instruct a server system to create an interface. Stahl simply does not disclose the same features as recited in claim 1 of the '656 Patent.

3560. For at least these reasons, in my opinion, claim 1 of the '656 Patent is valid over claim 18 of the '573 Patent.

2. Claim 2

i. [2.] The display device of claim 1 wherein said computer readable instructions for storing said image data in said memory further comprise instructions for causing image data previously stored in said memory to be replaced with said received image data.

3561. Claim 2 is valid for the same reasons as described above with respect to claim 1.

3562. Dr. Johnson asserts that the language of claim 18 of the '573 Patent that recites "wherein said at least one server system is configured to generate package data comprising said image data and said preferences and to periodically relay said package data comprising said image data and said preferences to said at least one digital picture frame . . . wherein said at least one digital picture frame is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in said memory" renders this element obvious. Johnson ¶2541.

3563. As shown above, claim 18 does not recite that a display device replaces previously stored image data with received image data. Nothing in claim 18 suggests the package data replaces data on the device. Dr. Johnson merely provides a general assertion that it would be obvious to add this functionality to claim 18 without any evidence, but just that the "periodic" nature of communication in claim 18 somehow suggests replacing data when maximum storage capacity is reached. Johnson ¶2543. This element is not obvious.

3564. It would not be obvious to simply replace images, however. Filling up storage and requiring manual storage management is much more common than the alternative of automatic replacement Dr. Johnson proposes, such as when a computer's hard drive fills up and needs to have contents manually deleted to free up space.

3565. For at least these reasons, in my opinion, claim 2 of the '656 Patent is valid over claim 18 of the '573 Patent.

3. Claim 5

i. [5.] The display device of claim 1 wherein said memory further comprises preference information for controlling the display of said image data by said display device.

3566. For at least these reasons, in my opinion, claim 5 of the '656 Patent is valid over claim 18 of the '573 Patent for the same reasons as described above with respect to claim 1.

4. Claim 6

i. [6.] The display device of claim 5 wherein said preference information comprises communication timing information for specifying the timing of sending requests for image data to said server system.

3567. Claim 6 is valid for the same reasons as described above with respect to claims 1 and 5.

3568. Dr. Johnson asserts that the language of claim 18 of the ’573 Patent that recites “at least one digital picture frame comprising memory and operating system software located inside said digital picture frame” and “said at least one server system coupled to said at least one digital picture frame via said network, wherein said at least one server system is configured to generate package data comprising said image data and said preferences and to periodically relay said package data comprising said image data and said preferences to at least one digital picture frame when and in response to said at least one digital picture frame automatically initiating communication with said server system and issuing a request for a current one of said package data comprising said image data and said preferences, wherein said at least one digital picture frame is configured to authenticate said at least one server system before storing said image data and said preferences from said current one of said package data at said at least one frame device in said memory” renders this element obvious. Johnson ¶¶2557-58.

3569. Dr. Johnson refers to elements of claim 18 directed to periodically relaying said package data, but the broad language of claim 18 does not recite the specific language of communication timing information for specifying the timing of sending requests for image data to said server system. Dr. Johnson asserts that a POSITA would have found it obvious to include “communication timing information” in the memory of a display device to achieve this functionality. However, nothing in claim 18 of the claim ’573 Patent suggests using specifically communication timing information stored in memory of a display device to accomplish this.

3570. Dr. Johnson cites to Kikinis as disclosing:

> Having Internet connection also allows participating vendors to up-load updated routines and possibly exchange information about users. It also allows the offering of new software to existing, already set up users, by letting their appliances receive such indication, or in case of non-info appliances, letting the user know by other means, such as e-mail, fax, mail etc., or by having the appliance look up and

> possibly connect to the server in certain, periodic, pre-programmed or flexible intervals.

Kikinis at 6:25-35.

3571. However, Kikinis merely discloses that an appliance can periodically look up whether a server has new software available. Kikinis does not disclose a display device that has preference information comprising communication timing information for specifying the timing of sending requests for image data to a server system.

3572. Furthermore, as discussed previously in this report, Kikinis is not analogous art, as it deals with a process to set up telephones. Kikinis discloses that a device can call a 1-800 number to get assistance, but that is not authenticated and requires a user to perform the call, or give permission for the device to perform the call.

3573. For at least these reasons, in my opinion, claim 6 of the ’656 Patent is valid over claim 18 of the ’573 Patent.

5. Claim 7

i. [7.] The display device of claim 5 wherein said preference information comprises display timing information for specifying the timing of displaying said image data on said display screen.

3574. Claim 7 of the ’656 Patent is valid over claim 18 of the ’573 Patent for the same reasons as described above with respect to claims 1 and 5.

ii. [8.] The display device of claim 5 wherein said preference information comprises an image display list.

3575. Claim 8 of the ’656 Patent is valid over claim 18 of the ’573 Patent for the same reasons as described above with respect to claims 1 and 5.

XV. OPINIONS AND CONCLUSIONS

3576. Based on my education, training, and experience coupled with the evidence cited and discussed in this report, I have arrived at several expert opinions.

3577. The asserted claims of the Patents-in-Suit ('573, '930, '562, and '656 Patents) are not abstract, and are patent eligible.

3578. The asserted claims of the Patents-in-Suit ('573, '930, '562, and '656 Patents) are enabled, sufficiently definite, and satisfy the written description requirement. A POSITA would have known from the patents themselves enough to build the invention.

3579. The asserted claims of the Patents-in-Suit ('573, '930, '562, and '656 Patents) are not rendered obvious under any combination of Bandaru, Kikinis, Muoio, The Fujitsu Stylistic Tablet, Nishiyama, Windows 98, Stahl, Jacklin, RFC 2246, Elgamal, Criss, Hoyle, and/or Kottapurath, or any of these asserted prior art citations individually.

3580. No combination of Bandaru, Kikinis, Muoio, The Fujitsu Stylistic Tablet, Nishiyama, Windows 98, Stahl, Jacklin, RFC 2246, Elgamal, Criss, Hoyle, and/or Kottapurath, nor any of these individually, disclose the limitations of the asserted claims of the Patents-in-Suit.

3581. The asserted claims of the '930 Patent are not invalid over Claim 18 of the '573 Patent or Claim 17 of the '562 Patent under obviousness-type double patenting, and the asserted claims of the '656 Patent are not invalid over Claim 18 of the '573 Patent under obviousness-type double patenting. The asserted claims of the '930 Patent are patentably distinct from Claim 18 of the '573 Patent and Claim 17 of the '562 Patent. The asserted claims of the '656 Patent are patentably distinct from Claim 18 of the '573 Patent.

3582. Because the inventors, Paul Yanover and Dean Schiller, conceived of the inventions disclosed in claims 2, 6, and 19 of the '573 Patent, claims 1-8 and 15 of the '930 Patent, and claims 1, 4, 11, 16-17, and 20 of the '562 Patent by at least September 16, 1999, Bandaru is not prior art

to claims 2, 6, and 19 of the ’573 Patent, claims 1-8 and 15 of the ’930 Patent, and claims 1, 4, 11, 16-17, and 20 of the ’562 Patent. Bandaru claims priority to a CIP application filed on September 23, 1999, which in turn claims priority to an original parent application filed November 18, 1998. The CIP application added substantial new subject matter not found in the original parent application of Bandaru. Since this new subject matter was added in the CIP application on September 23, 1999, after the date of conception of September 16, 1999, this new subject matter in Bandaru is not prior art to claims 2, 6, and 19 of the ’573 Patent, claims 1-8 and 15 of the ’930 Patent, and claims 1, 4, 11, 16-17, and 20 of the ’562 Patent.

3583. I disagree with Dr. Johnson’s ultimate opinion that the Patents-in-Suit are invalid for any reasons. As stated above, each of the Asserted Claims of the Patents-in-suit is valid.

3584. I reserve the right to supplement my opinions based on any evidence or arguments provided by Amazon and/or its experts on any issue relevant to this Report.

XVI. SIGNATURE

Dated: October 13, 2023

Dr. William C. Easttom II

Attachments

Exhibit A: Curriculum Vitae

Exhibit B: List of Materials Considered

Exhibit C: Schiller Declaration